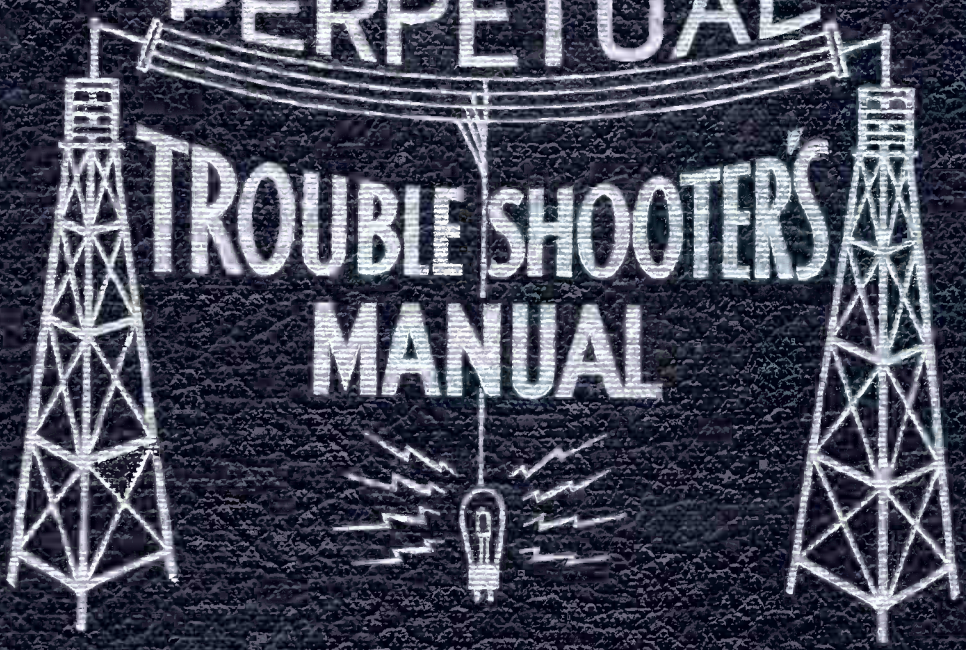
VOLUME IV

PERPETUAL TROUBLE SHOOTER'S MANUAL



JOHN F. RIDER

PERPETUAL

TROUBLE SHOOTER'S MANUAL

VOLUME IV

by

JOHN F. RIDER

Published by

JOHN F. RIDER

1440 Broadway New York City

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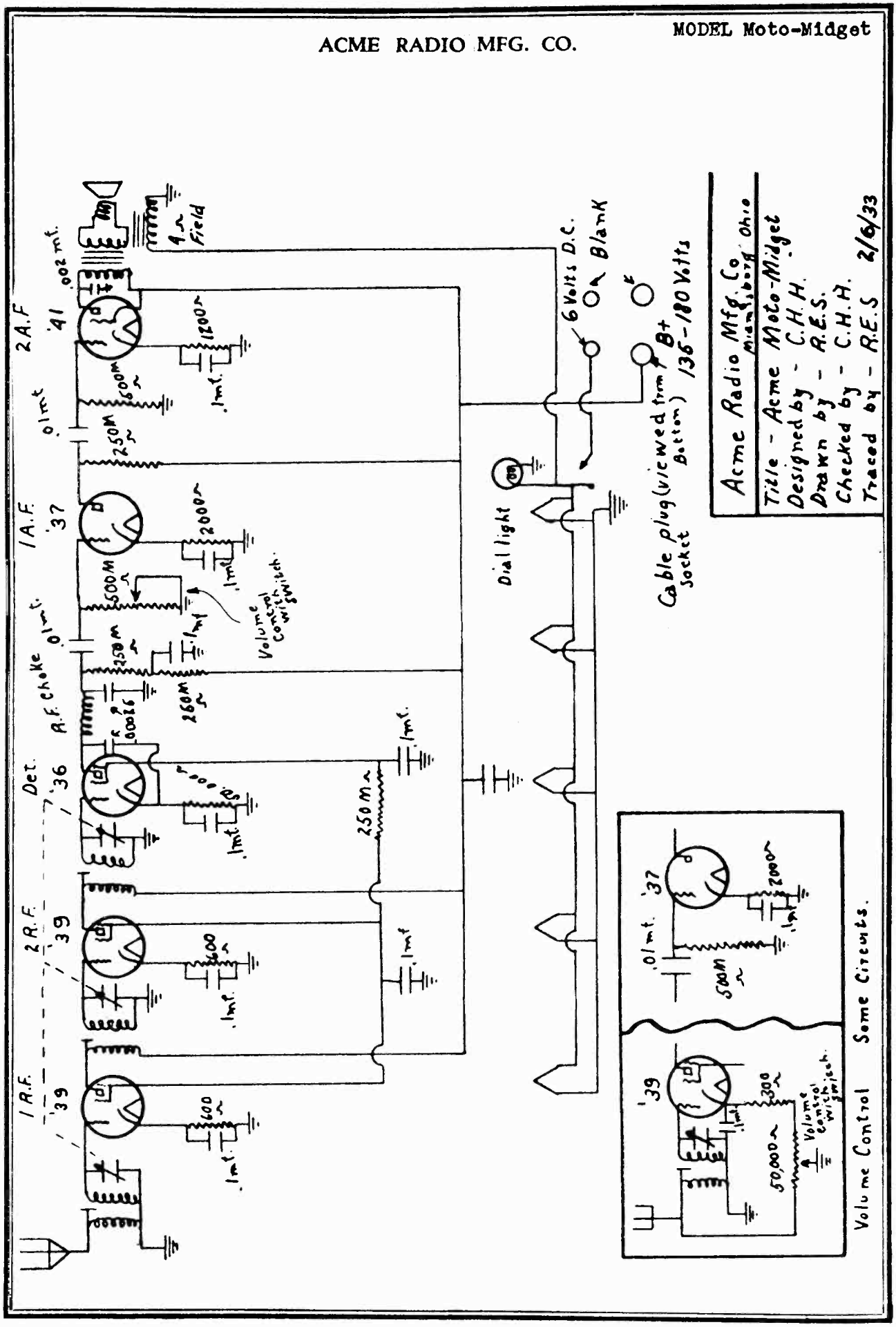
Printed in U.S.A.

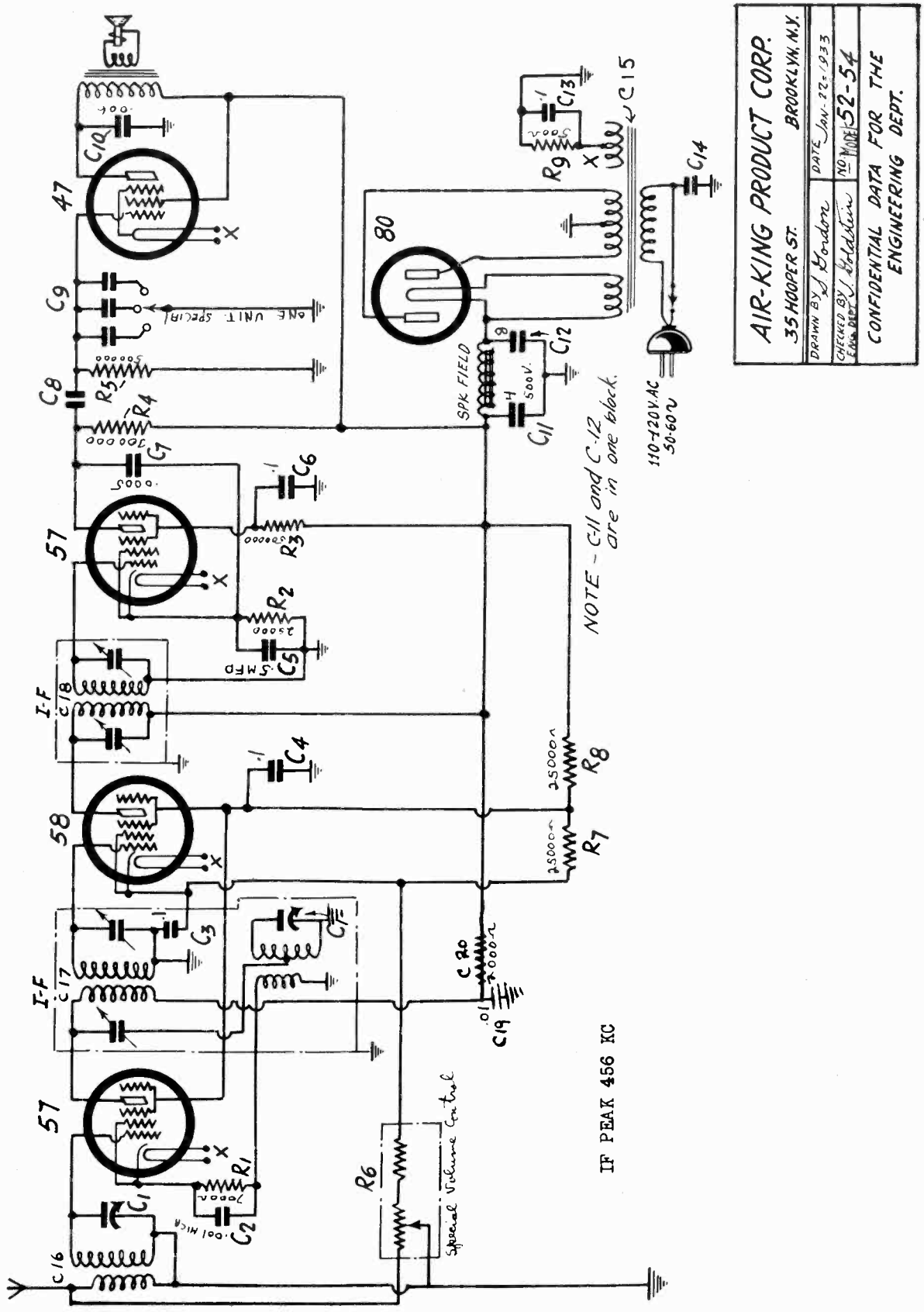
MODEL Moto-Midget

ACME RADIO MFG. CO.



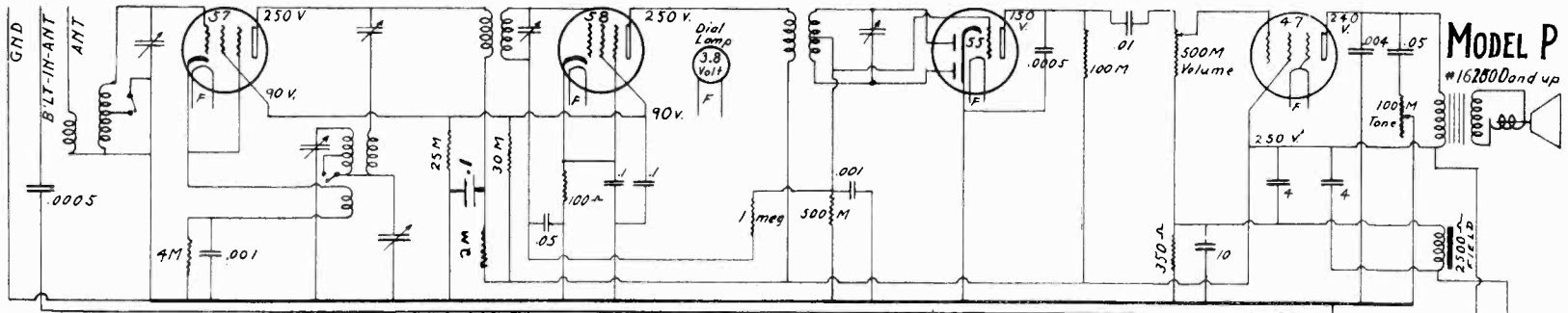
AIR KING PRODUCTS CORP.

MODEL 52-54

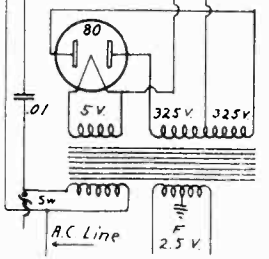


ALLIED RADIO CORP.

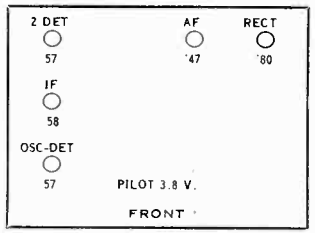
MODEL KNIGHT 6 Tube
Dual Wave A-C
KNIGHT 6 Tube
Dual Wave Battery



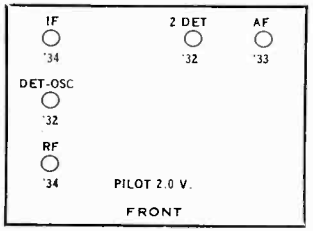
CAUTION: *Do not attempt to operate on current other than that noted on instrument.*

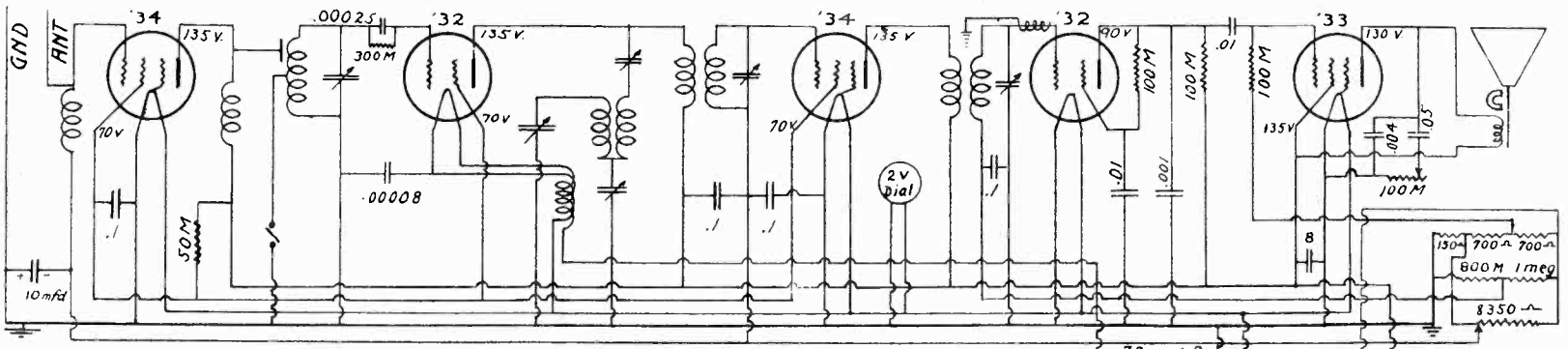


Model P (1932)



Model P/B (1932)





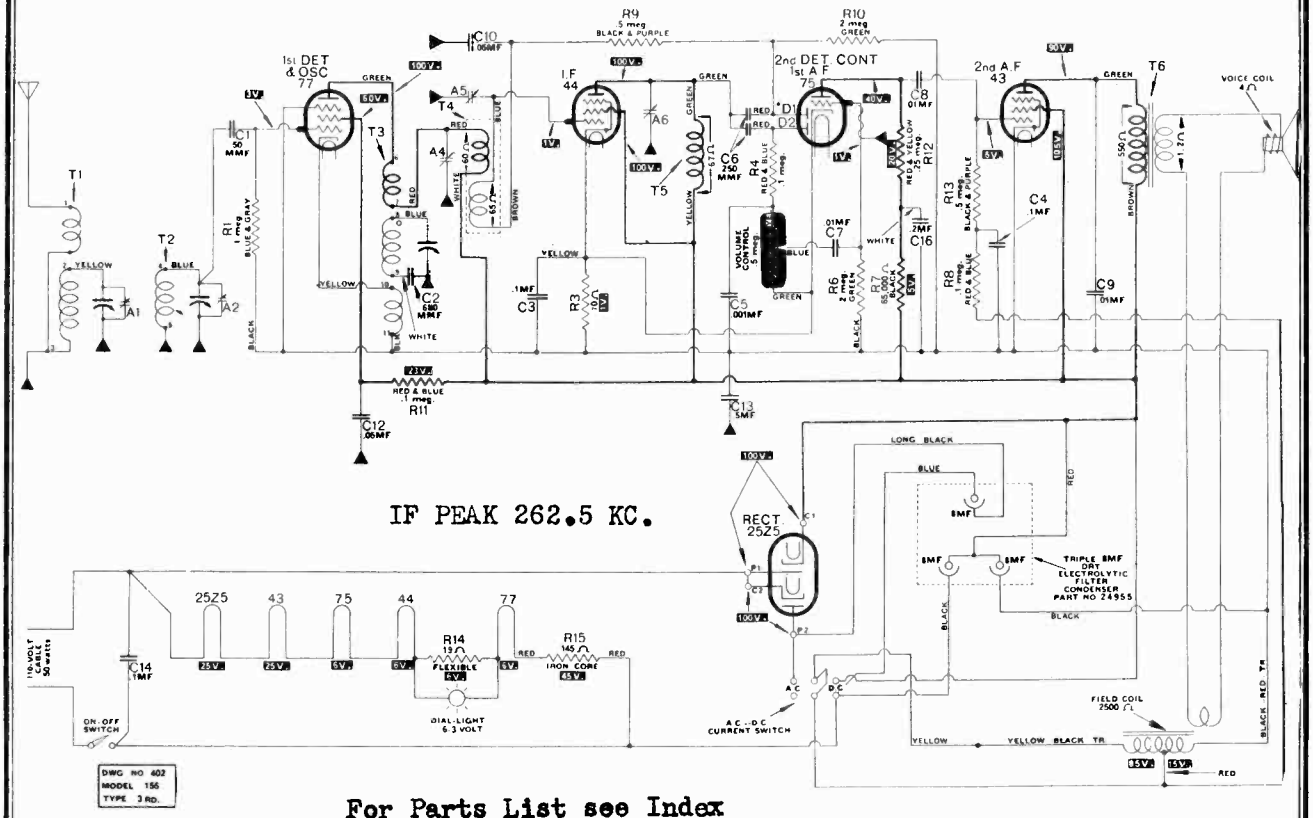
CAUTION: Do not attempt to operate on run-down batteries. When "B's" test below 100 volts and "A" below 1.8 volts provide new batteries

MODEL P Battery

IF PEAK 175 KC

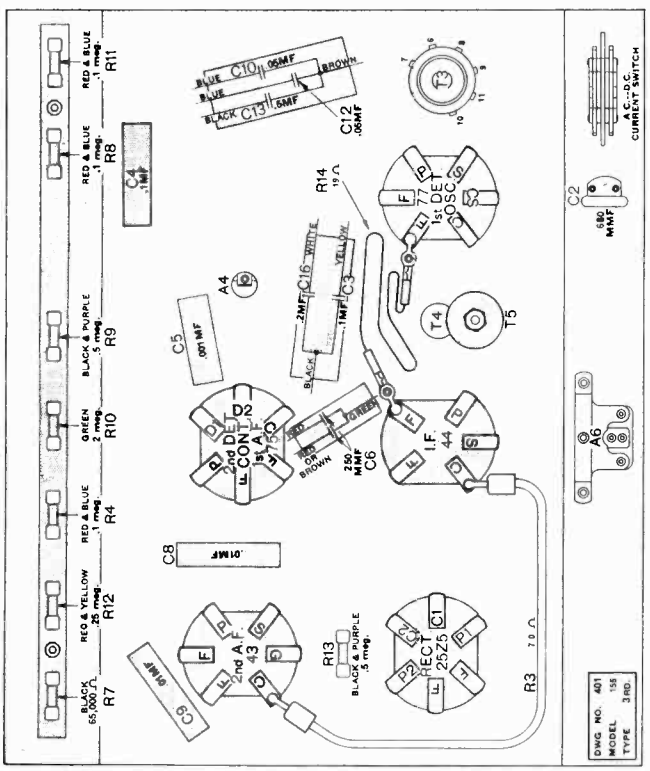
ATWATER KENT MFG. CO.

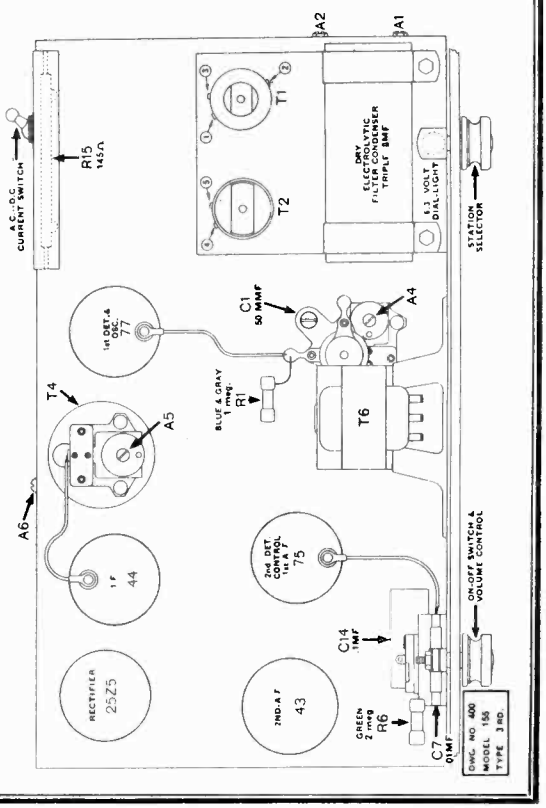
MODEL 155 (3rd type)
above serial 7088700
Schematic, socket



IF PEAK 262.5 KC.

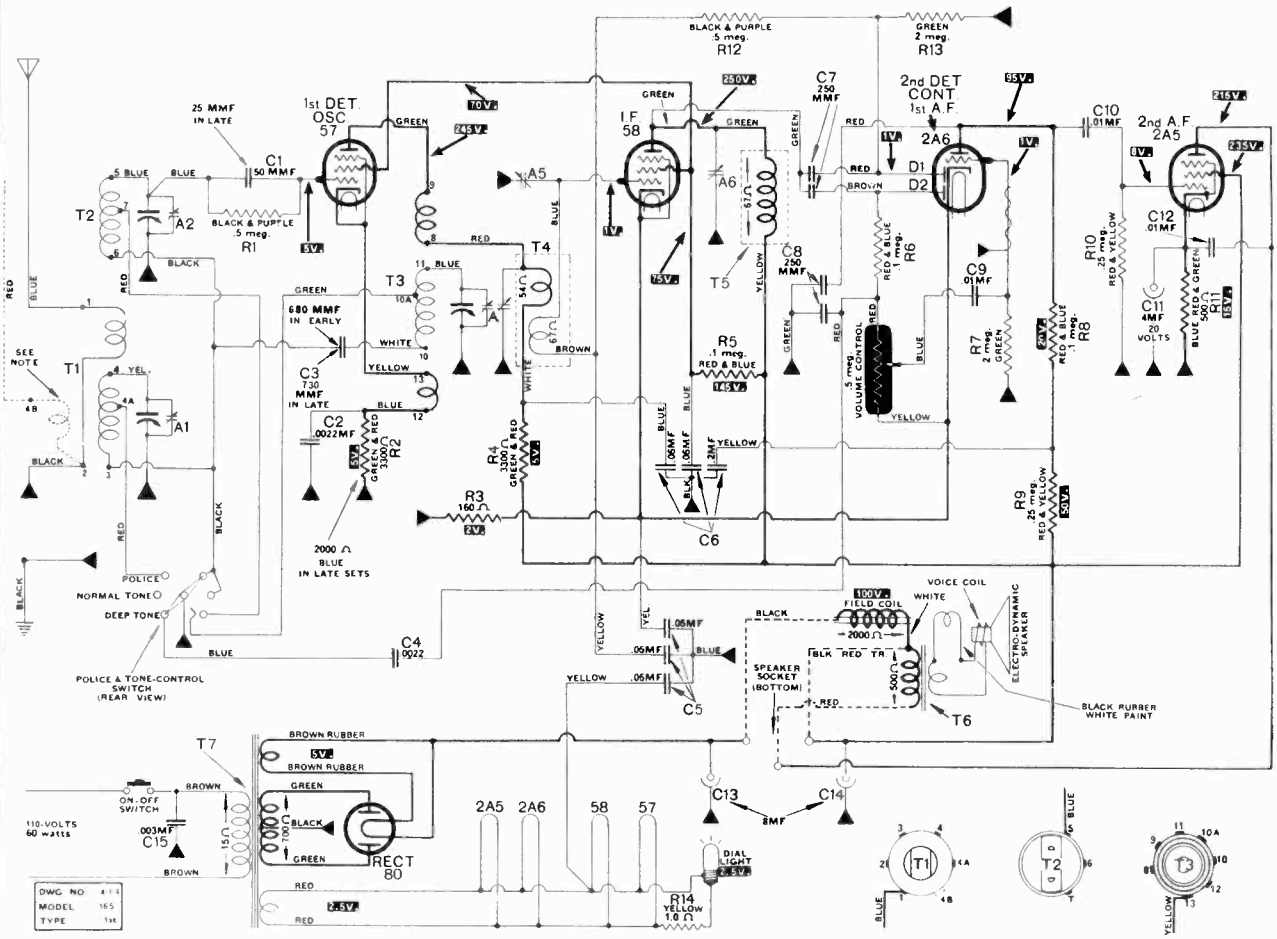
For Parts List see Index

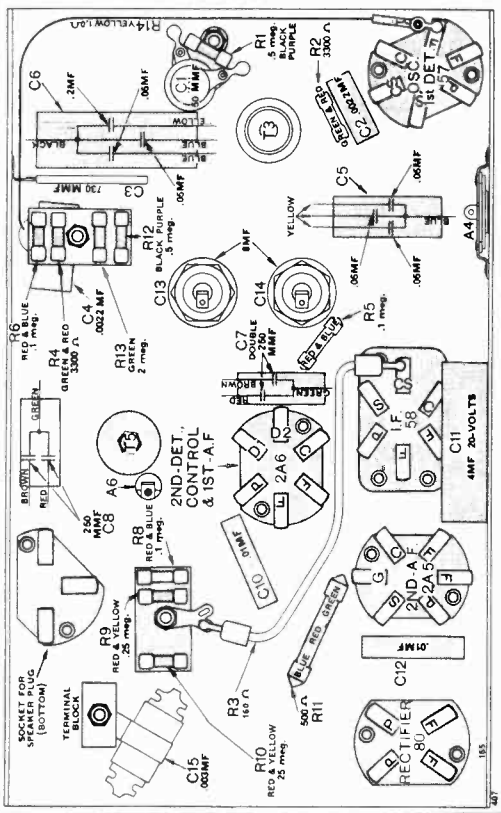




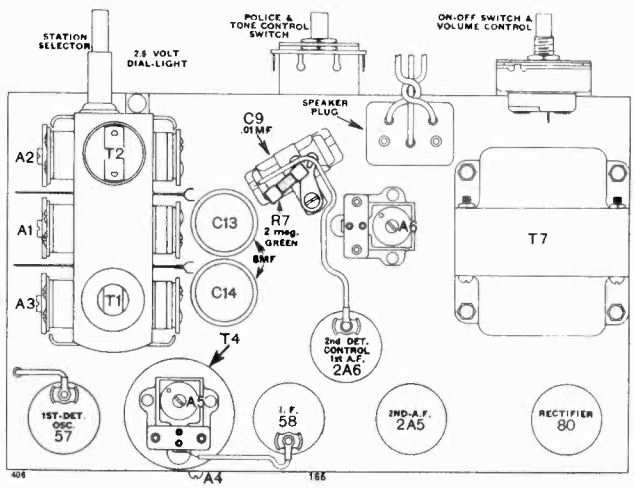
MODEL 165
Schematic, socket

ATWATER KENT MFG. CO.





IF PEAK 262.5 KC.



In late type 165, the 1st-detector bias resistor R2 is 2000 ohms, ½ watt (blue).

In a few early 165 sets, the tracking condenser C3 is 680MMF.

In late sets, C1 is 25MMF instead of 50MMF.

The additional primary, shown in dotted lines on No. 1 R.F.T., is used in some 165 sets.

ATWATER KENT MFG. CO.

MODEL 155 (3rd type)
MODEL 165
Parts lists

PARTS AND PRICE LIST FOR 3rd TYPE MODEL 155, No. 32800

ABOVE SERIAL No. 7088700

For parts not listed below, please order by description or name of part and model number of set.

Part No.	Name of Part	List Price
24293	Volume control, complete, less leads, .5 meg.	$ .75
24722	Cabinet complete	3.50
24955	Triple dry electrolytic condenser 8, 8, 8MF, 150 volts	1.50
*25317	Variable condenser rotor stator and frame (23 plates)	2.00

* In 1st and 2nd type Model 155, the variable condenser is No. 24561, list price $2.00 (21 plates).

TRANSFORMERS

Dia. Code No.	Part No.	Name of Part	List Price
T-1	32210	No. 1 R. F. transformer	$1.00
T-2	32220	No. 2 R. F. transformer	1.00
T-3	32190	Oscillator transformer	.70
T-4	31790	No. 1 I. F. transformer	.65
T-5	31780	No. 2 I. F. transformer	.35
T-6	24897	Output transformer	.85

RESISTORS

R-1	30360	Blue-gray	1,000,000 ohms, 1/3 watt	$ .10
R-3	18520	Flexible	70 ohms	.18
R-4	30340	Red-blue	100,000 ohms, 1/3 watt	.10
R-6	30370	Green	2,000,000 ohms, 1/3 watt	.10
R-7	31980	Black	65,000 ohms, 1/3 watt	.10
R-8	30340	Red-blue	100,000 ohms, 1/3 watt	.10
R-9	30350	Black-purple	500,000 ohms, 1/3 watt	.10
R-10	30370	Green	2,000,000 ohms, 1/3 watt	.10
R-11	30340	Red-blue	100,000 ohms, 1/3 watt	.10
R-12	31970	Red-yellow	250,000 ohms, 1/3 watt	.10
R-13	30350	Black-purple	500,000 ohms, 1/3 watt	.10
R-14	16610	Flexible	19 ohms	.15
R-15	31690	Iron core	145 ohms	.30

FIXED CONDENSERS

Dia. Code No.	Part No.		List Price
C-1	30260	50MMF, letter E stamped on washer	$ .15
C-2	31180	680MMF, 100 volts	.35
C-3, C-16	32760	.1MF, and .2MF, 100 volts	.30
C-4	31530	.1MF, 100 volts	.22
C-5	33640	.001MF, 450 volts	.22
C-6	33630	250MMF (double) 450 volts	.25
C-7	23250	.01MF, 450 volts	.31
C-8	27630	.01MF, 200 volts	.20
C-9	27630	.01MF, 200 volts	.20
C-10, C-12, C-13	31890	.05MF, .05MF, and .5MF, 100 volts	.45
C-14	26660	.1MF, 200 volts	.25

No. 24942 SPEAKER

Part No.	Name of Part	List Price
24942	Speaker, complete	$ 3.25
24897	Output transformer (T-6)	.85
25053	Field coil (2500 ohms)	1.25
24895	Cone assembly	1.65

MISCELLANEOUS PARTS

Part No.	Name of Part	List Price
24908	Instruction and log card (F-1056)	net $ .01
24733	110-volt cable and plug	.60
24727	Antenna lead (30 feet)	.75
24278	Knob for volume control or station selector	.10
24892	A. C.—D. C. current switch	.60

PARTS AND PRICE LIST FOR MODEL 165, No. 34,000

Part No.	Name of Part	List Price
25309	Cabinet, complete	$ 4.50
24293	Volume control and on-off switch (.5 meg.)	.75
25022	Variable condenser	2.25
25312	Police and tone control switch, complete	.40
25311	Switch base, complete	.25
25226	Switch shaft and blade	.05

TRANSFORMERS

Dia. Code No.	Part No.	Description	List Price
T-1	32430*	No. 1 R. F. T.	$ 1.00
T-2	32440	No. 2 R. F. T.	1.00
T-3	32450	Oscillator transformer	1.00
T-4	32620	No. 1. F. transformer	.75
T-5	32630	No. 2 I. F. transformer	.35
T-6	21672	A. F. output transformer	1.25
T-7	25191**	Power transformer	3.15

*In some sets, T1 has an extra winding as shown in dotted lines on page 3. The part number of this transformer is 33820, list price $1.00.

** Some early Model 165 sets use a 75 tube instead of 2A6. These sets require a No. 25307 power transformer which has an extra winding to provide 6 volts for the 75 filament. The list price of No. 25307 is $3.50.

RESISTORS

R-1	30350	Black and purple, .5 meg., 1/3 watt	.10
*R-2	33250	Blue, 2000 ohms, 1/3 watt	.10
R-3	28950	Flexible, 160 ohms	.17
R-4	30380	Red and green, 3300 ohms. 1/3 watt	.10
R-5	20980	Red and blue, .1 meg., 1/2 watt	.10
R-6	30340	Red and blue, .1 meg., 1/3 watt	.10
R-7	30370	Green, 2 meg., 1/3 watt	.10
R-8	30340	Red and blue, .1 meg., 1/3 watt	.10
R-9	31970	Red and yellow, .25 meg., 1/3 watt	.10
R-10	31970	Red and yellow, .25 meg., 1/3 watt	.10
R-11	32010	Blue, red and green, 500 ohms, 1 watt	.15
R-12	30350	Black and purple, .5 meg., 1/3 watt	.10
R-13	30370	Green, 2 meg., 1/3 watt	.10
R-14	31860	Flexible, 1 ohm, yellow covered	.17

* In early 165, R-2 is No. 30380 red and green, 3300 ohms, 1/3 watt, $.10.

CONDENSERS

*C-1	30260	50MMF. Letter E stamped on washer	$ .15
C-2	33660	.0022MF, 400-volts	.22

* In late sets C1 is 25MMF, No. 33650 list price $.15.

CONDENSERS

Dia. Code No.	Part No.	Description	List Price
**C-3	25638	730MMF, 100-volts	.25
C-4	33660	.0022MF, 450-volts	.22
C-5	32360	.05, .05 and .05MF, 100-volts	.40
C-6	32350	.05, .05 and .2MF, 200-volts	.50
C-7	33630	250MMF (double), 450-volts	.25
C-8	33630	250MMF (double), 450-volts	.25
C-9	23250	.01MF, 450-volts	.31
C-10	27630	.01MF, 200-volts	.20
C-11	25167	4MF, 20-volts dry electrolytic	.40
C-12	27630	.01MF, 200-volts	.20
C-13	25168	8MF, 475-volts, electrolytic	.85
C-14	25168	8MF. 475-volts, electrolytic	.85
C-15	32740	.003MF, 500-volts	.40

** In early 165, C-3 is No. 31180. 680MMF, 100 volts $.35.

MISCELLANEOUS PARTS

Part No.	Description	List Price
25194	Cloth screen	$ .40
25213	Cabinet foot	.02
24278	Station selector and volume control knob	.10
25145	Police and tone control switch knob	.15
24323	Power transformer cover (2 used)	.15
24554	I.F.T. shield and trimmer (A5)	.55
19566	110-volt cable and plug	.45
24732	110-volt plug	.06
15404	2.5-volt dial lamp	.15
22683	Tube shield	.10
24549	Dial assembly	.25
31870	Trimmer A6	.20
24495	Trimmer A4	.25
25196	Speaker socket	.10
24492	Rectifier socket	.10
24494	Small 6-prong socket (3 used)	.10
22733	Large 6-prong socket (1 used)	.10
25049	Instruction and log card (F-1059)	net .01
25186	Switch instruction tag	net .01
25189	Shipping container	net .25

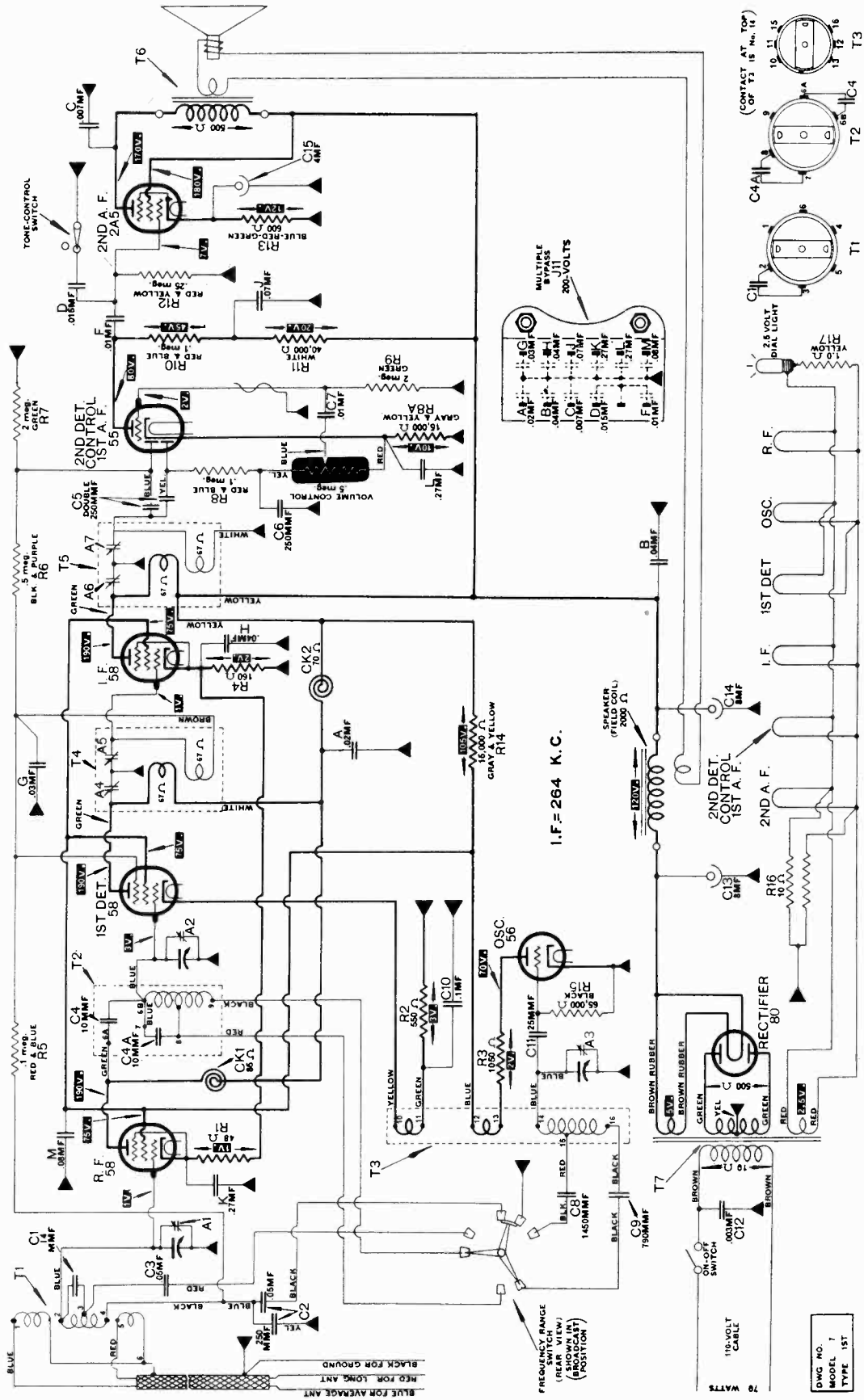
No. 34100 SPEAKER FOR MODEL 165

18870	Field coil (2000 ohms)	$ 1.25
21672	Output transformer (T6)	1.25
21161	Diaphragm	1.05
25179	Cable and plug	.40
25308	Speaker plug (3-prong)	.08

MODEL 217,427,667
Schematic
Voltage

ATWATER KENT MFG. CO.

DIAGRAM OF MODELS 217, 427 AND 667

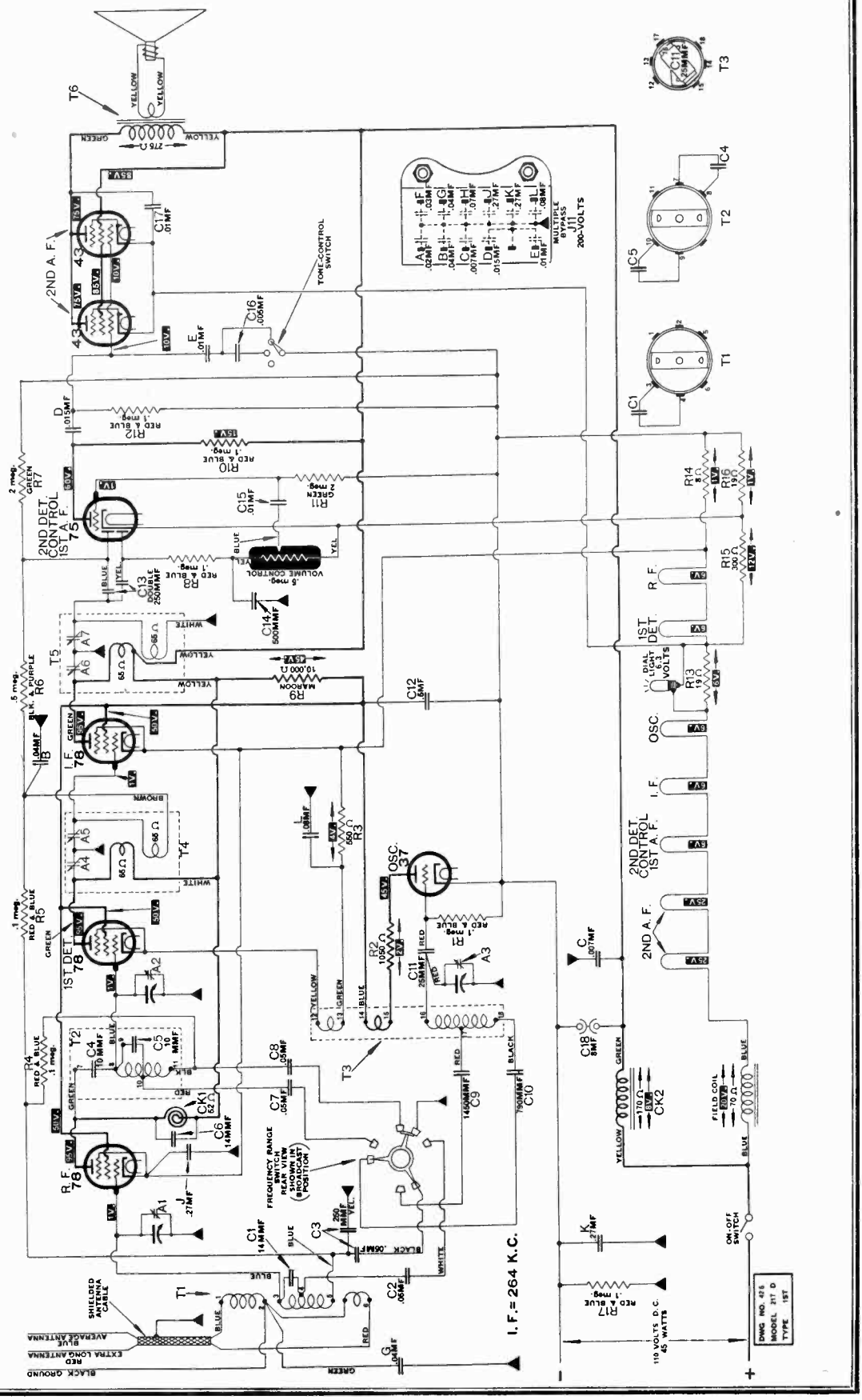


Above voltage measurements were made with 250-volt scale of a 1000-ohm-per-volt meter and a line supply of 110-volts. All measurements are made from cathode of each tube.

DIAGRAM OF MODELS 217D, 427D AND 667D

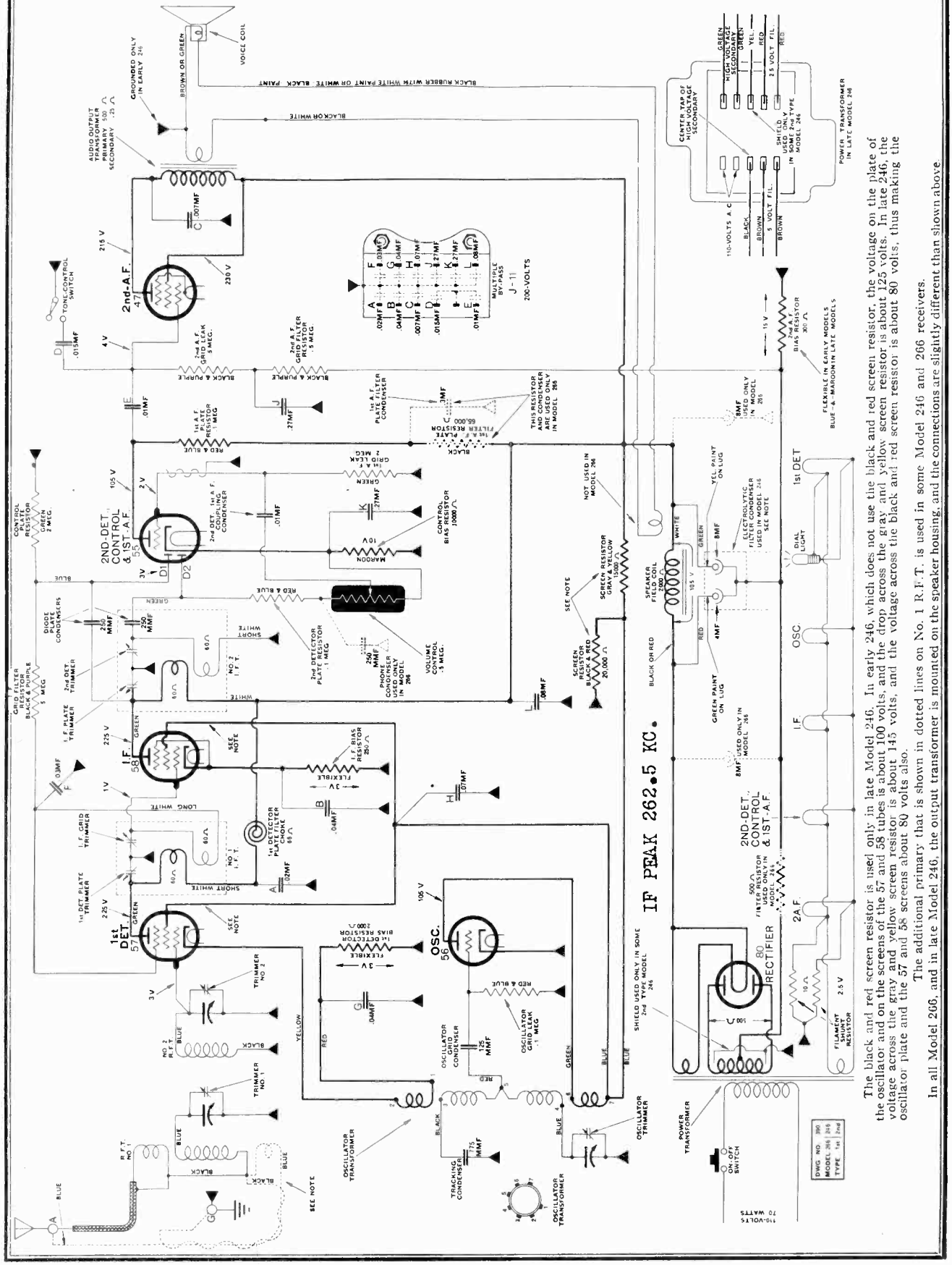
ATWATER KENT MFG. CO.

MODEL 217D, 427D, 667D
Schematic
Voltage



MODEL 246,266
(2nd type)
Schematic
Voltage

ATWATER KENT MFG. CO.



The black and red screen resistor is used only in late Model 246. In early 246, which does not use the black and red screen resistor, the voltage on the plate of the oscillator and on the screens of the 57 and 58 tubes is about 100 volts, and the drop across the gray and yellow screen resistor is about 125 volts. In late 246, the voltage across the gray and yellow screen resistor is about 145 volts, and the voltage across the black and red screen resistor is about 80 volts, thus making the oscillator plate and the 57 and 58 screens about 80 volts also.

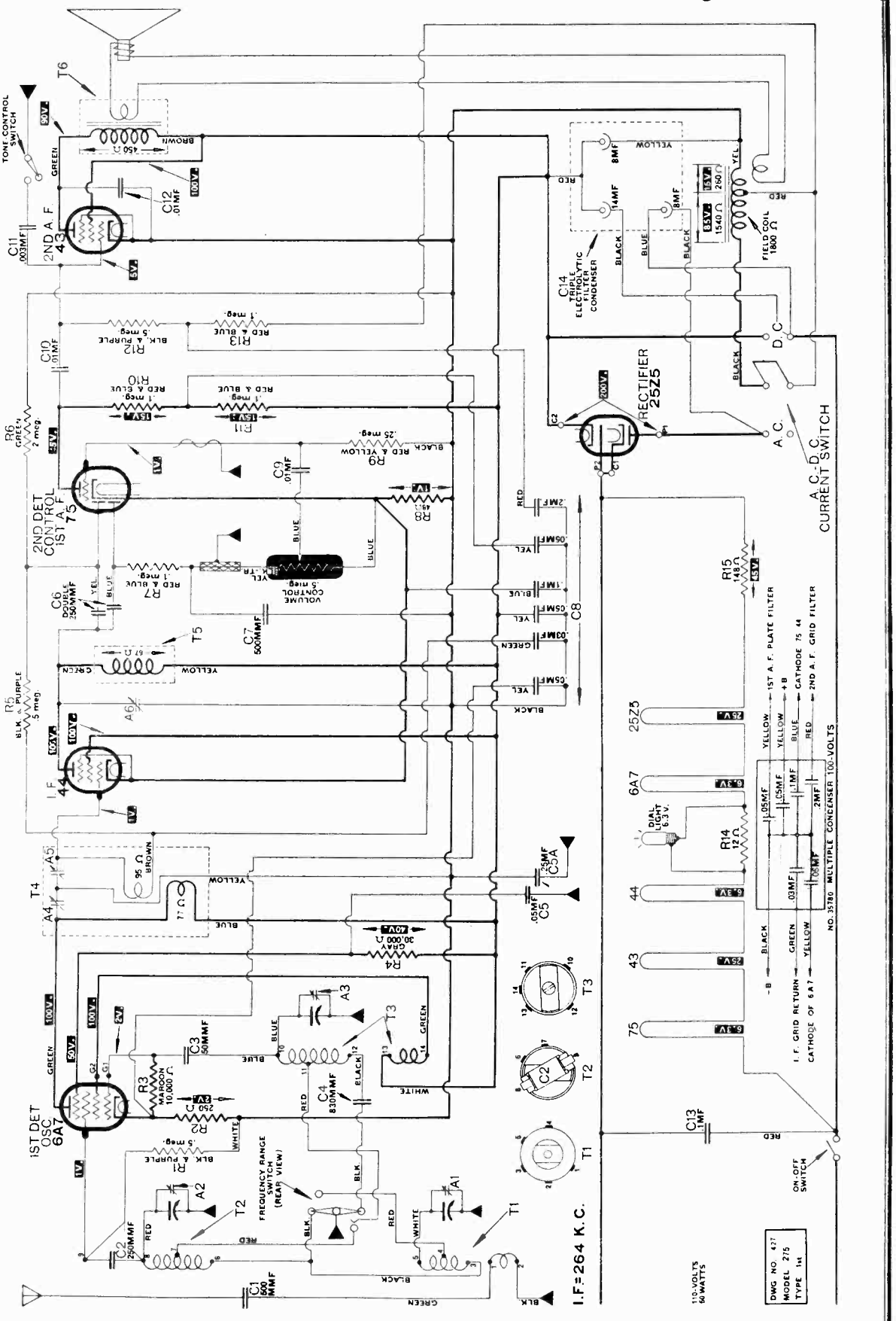
The additional primary that is shown in dotted lines on No. 1 R.F.T. is used in some Model 246 and 266 receivers.

In all Model 266, and in late Model 246, the output transformer is mounted on the speaker housing, and the connections are slightly different than shown above.

ATWATER KENT MFG. CO.

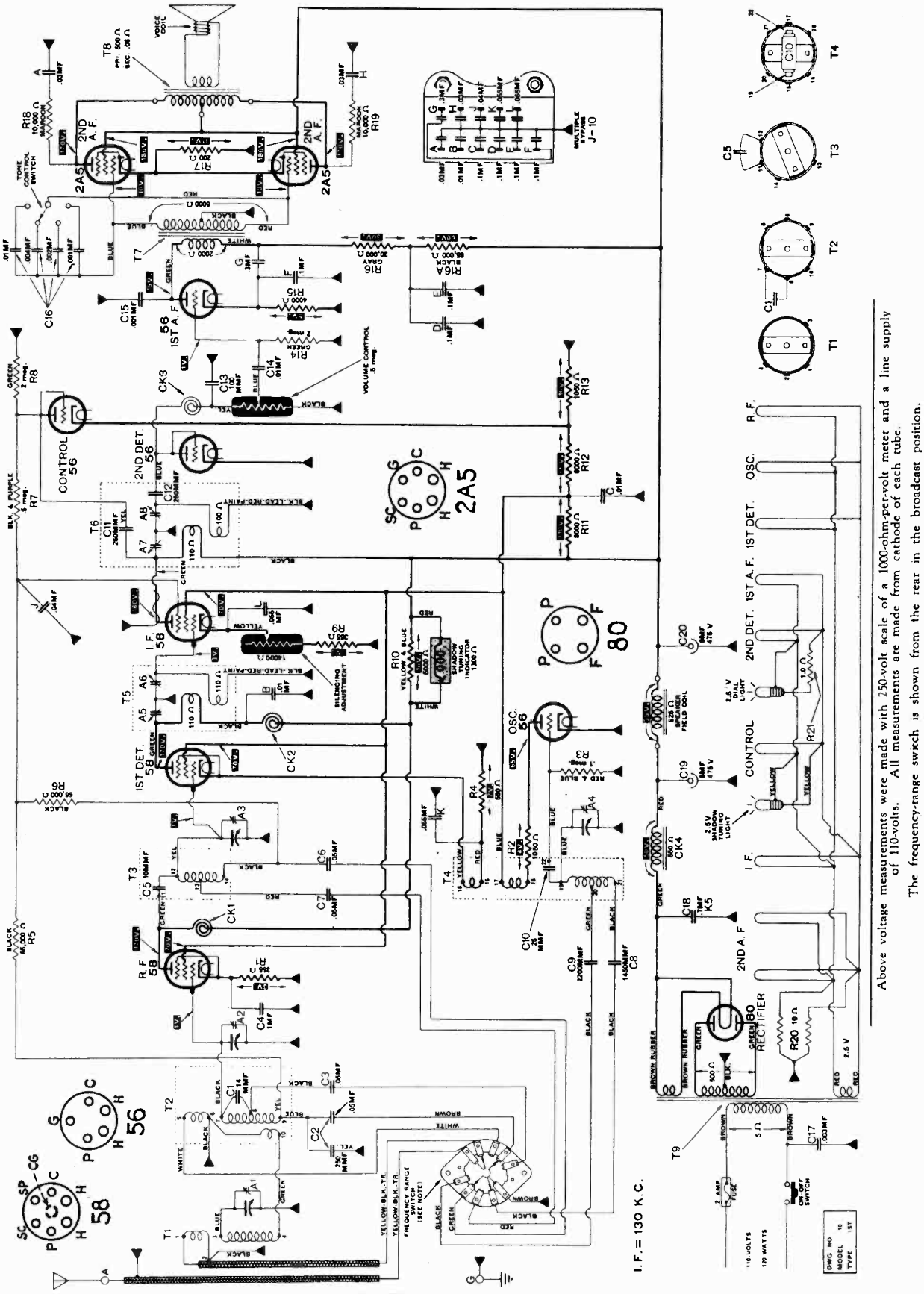
MODEL 275 (1st type)
Schematic
Voltage

DIAGRAM OF MODEL 275



MODEL 310,510
Schematic
Voltage

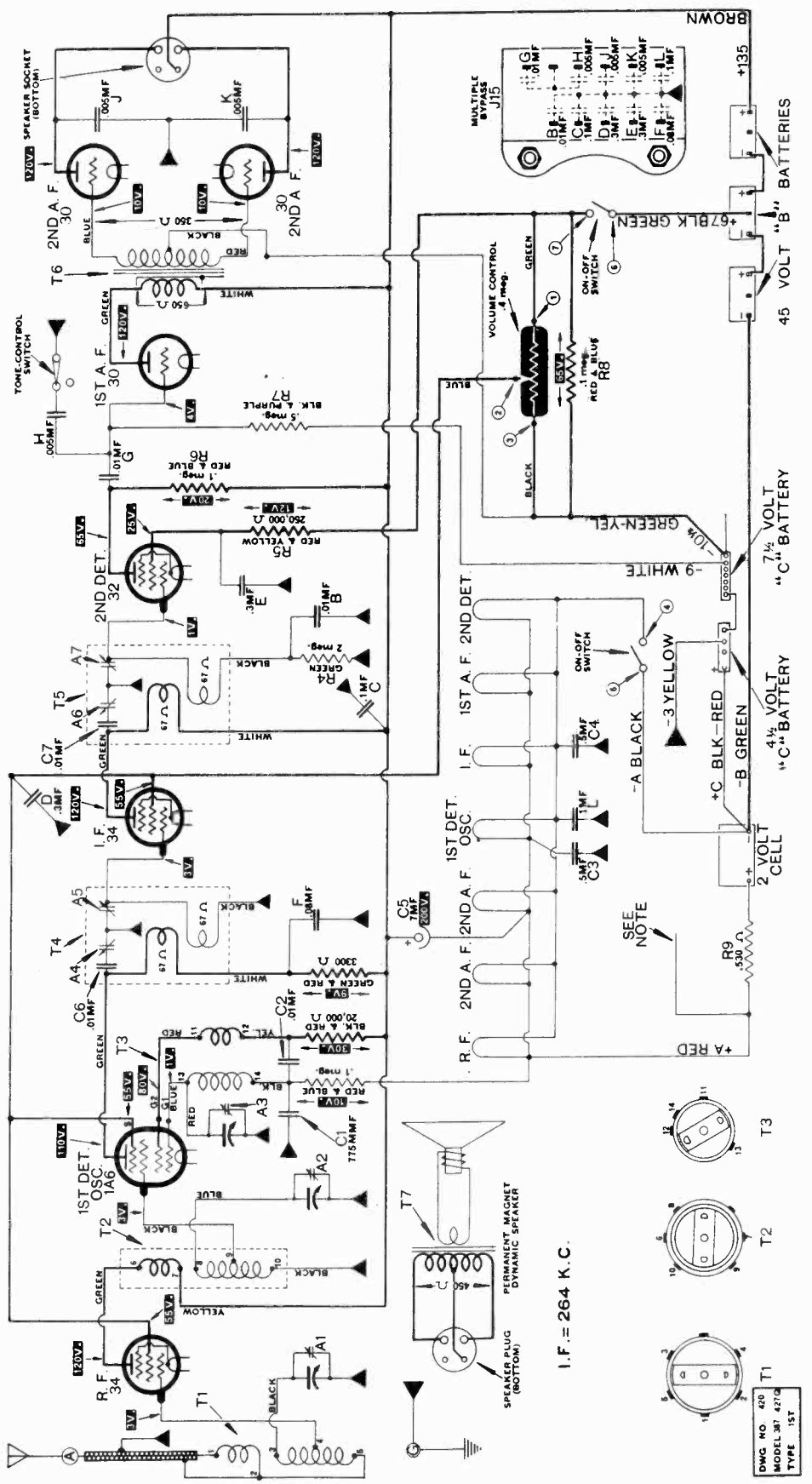
ATWATER KENT MFG. CO.



ATWATER KENT MFG. CO.

MODEL 387,427Q
Schematic
Voltage

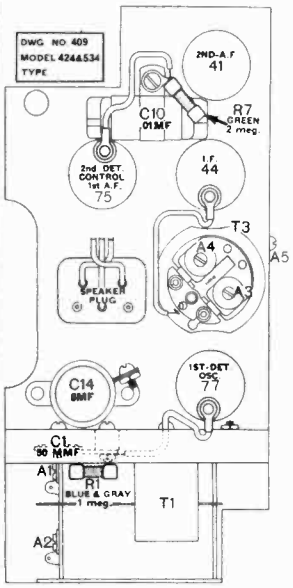
DIAGRAM OF MODELS 387 AND 427Q



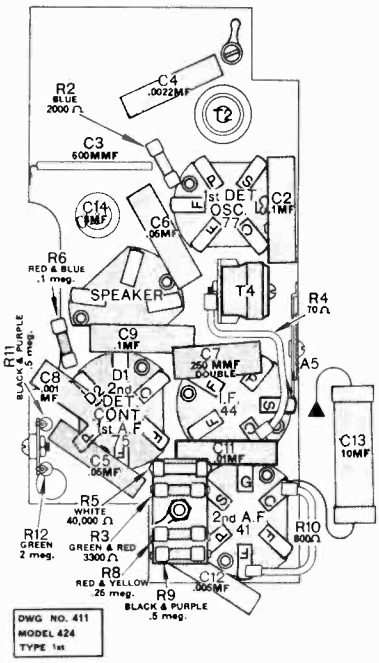
Total "B" voltage at time measurements were made equaled 120-volts. Tube voltages are taken from —F of each tube, using the 250-volt scale of a 1000-ohm-per-volt meter. Resistor R9 is used with 2-volt air cell, but is not used with 2-volt storage cell.

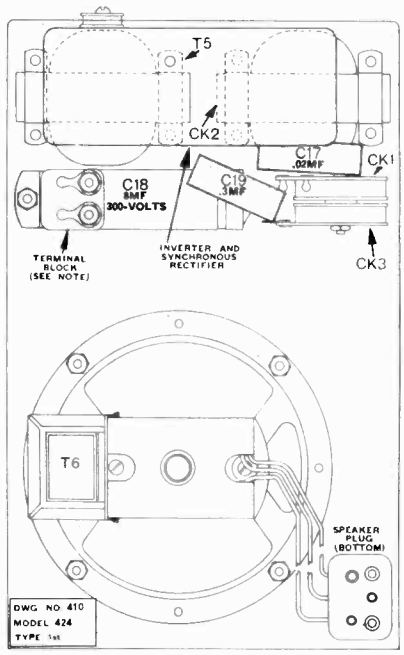
MODEL 424,534
Socket,Chassis
Parts List

ATWATER KENT MFG. CO.



Top View.





Charts of receiver and power unit sections.

PARTS AND PRICE LIST FOR MODEL 424, No. 35000

Part No.	Name of Part	List Price
23482A	Volume control, complete less leads, .5 meg	$ .55
25287	Variable condenser rotor, stator, and frame	1.25
25279	On-off lockswitch	.40
25595	Inverter and synchronous rectifier complete	5.95

TRANSFORMERS

Dia. Code No.	Part No.	Description	List Price
*T1	33140	No. 1 R. F. T	$ .50
T2	33150	No. 2 R. F. T and oscillator trans	.60
T3	25505	No. 1 I. F. T. less trimmers	.55
T4	33360	No. 2 I. F. T.	.35
T5	25371	Power transformer	2.60
T6	25608	Output transformer	.85

*In late sets, T1 is shielded, and the part number is 33750, $.50.

RESISTORS

R1	30360	Blue-gray ... 1,000,000 ohms, ½ watt	$ .10
R2	33250	Blue ... 2,000 ohms, ½ watt	.10
R3	30380	Red-green ... 3,300 ohms, ½ watt	.10
R4	18520	Flexible ... 70 ohms,	.18
R5	26160	White ... 40,000 ohms, ½ watt	.10
R6	30340	Red-blue ... 100,000 ohms, ½ watt	.10
R7	30370	Green ... 2,000,000 ohms, ½ watt	.10
R8	31970	Red-yellow ... 250,000 ohms, ½ watt	.10
R9	30350	Black-purple ... 500,000 ohms, ½ watt	.10
R10	20120	Flexible ... 800 ohms,	.15
R11	30350	Black-purple ... 500,000 ohms, ½ watt	.10
R12	30370	Green ... 2,000,000 ohms, ½ watt	.10

CONDENSERS

C1	30260	50MMF Letter E stamped on washer	$ .15
C2	31530	.1MF, 100 volts, N. I.	.22
C3	33280	600MMF, 100 volts, mica	.30
C4	33660	.0022MF, 450 volts, inductive	.22
C5	31160	.05MF, 100 volts, N. I.	.25
C6	26820	.05MF, 200 volts, N. I.	.20
C7	33630	250MMF (double) 450 volts, inductive	.25
C8	33640	.001MF, 450 volts, N. I.	.22
C9	31530	.1MF, 100 volts, N. I.	.22
C10	23250	.01MF (metal case) 450 volts	.31
C11	27630	.01MF, 200 volts, inductive	.20

Diam. Code No.	Part No.	Description	List Price
C12	28040	.005MF, 200 volts, inductive	.20
C13	24379	10MF, 25 volt, dry electrolytic	.40
C14	25385	8MF, 250 volts, dry electrolytic	.65
C15	33070	.05MF, 450 volts	.35
C16	33070	.05MF, 450 volts	.35
C17	29030	.02MF, 450 volts, N. I.	.20
C18	25384	8MF, 300 volts, dry electrolytic	.75
C19	31150	.3MF, 100 volts, N. I.	.25
C20	27630	.01MF, 200 volts, inductive	.20

CHOKES

CK1	17015	R. F. "B" filter choke	.25
CK2	33450	A. F. "B" filter choke	1.20
CK3	23530	R. F. "A" filter choke	.40

TRIMMERS

A3, A4	32880	Double I. F. trimmer	.30
A5	24495	Single I. F. trimmer	.25

SUPPRESSOR PARTS

Part No.	Name of Parts	List Price
21143	Plug suppressor	$ .30
21144	Distributor suppressor	.30
23260	Generator condenser, 1MF, 200 volts	1.05
23520	Ignition filter	2.00

SPEAKER

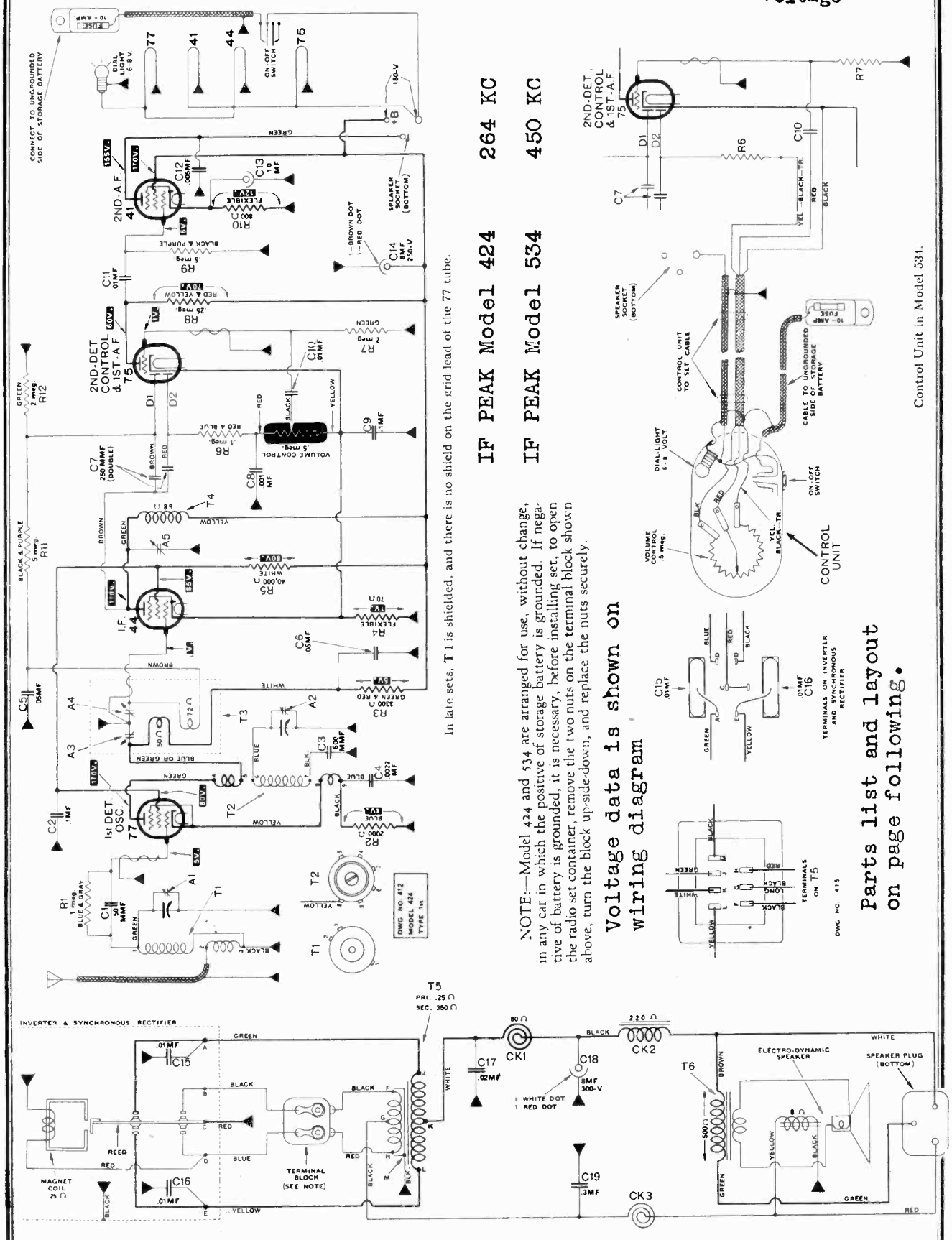
25386	Speaker complete	3.25
25604	Cone assembly	1.65
25607	Field coil (8 ohms approximately)	.85
25608	Output transformer (T6)	.85

MISCELLANEOUS PARTS

24169	Dial or volume control knob		.20
21407	Dial lamp 6-8 volts		.20
21406	Fuse (10 amps.)		.05
20976	Lockswitch key		.05
25378	Instruction sheet (F-1071)	net	.02

ATWATER KENT MFG. CO.

MODEL 424, 534
Schematic
Voltage

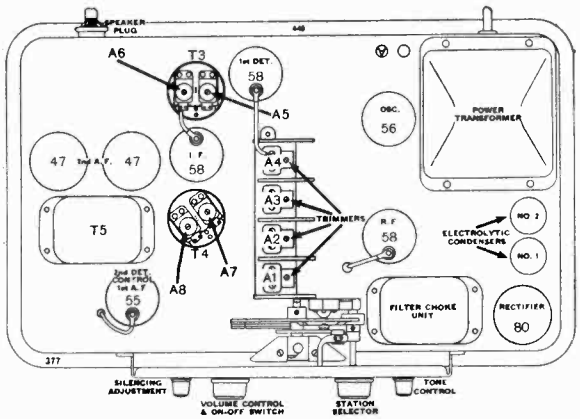


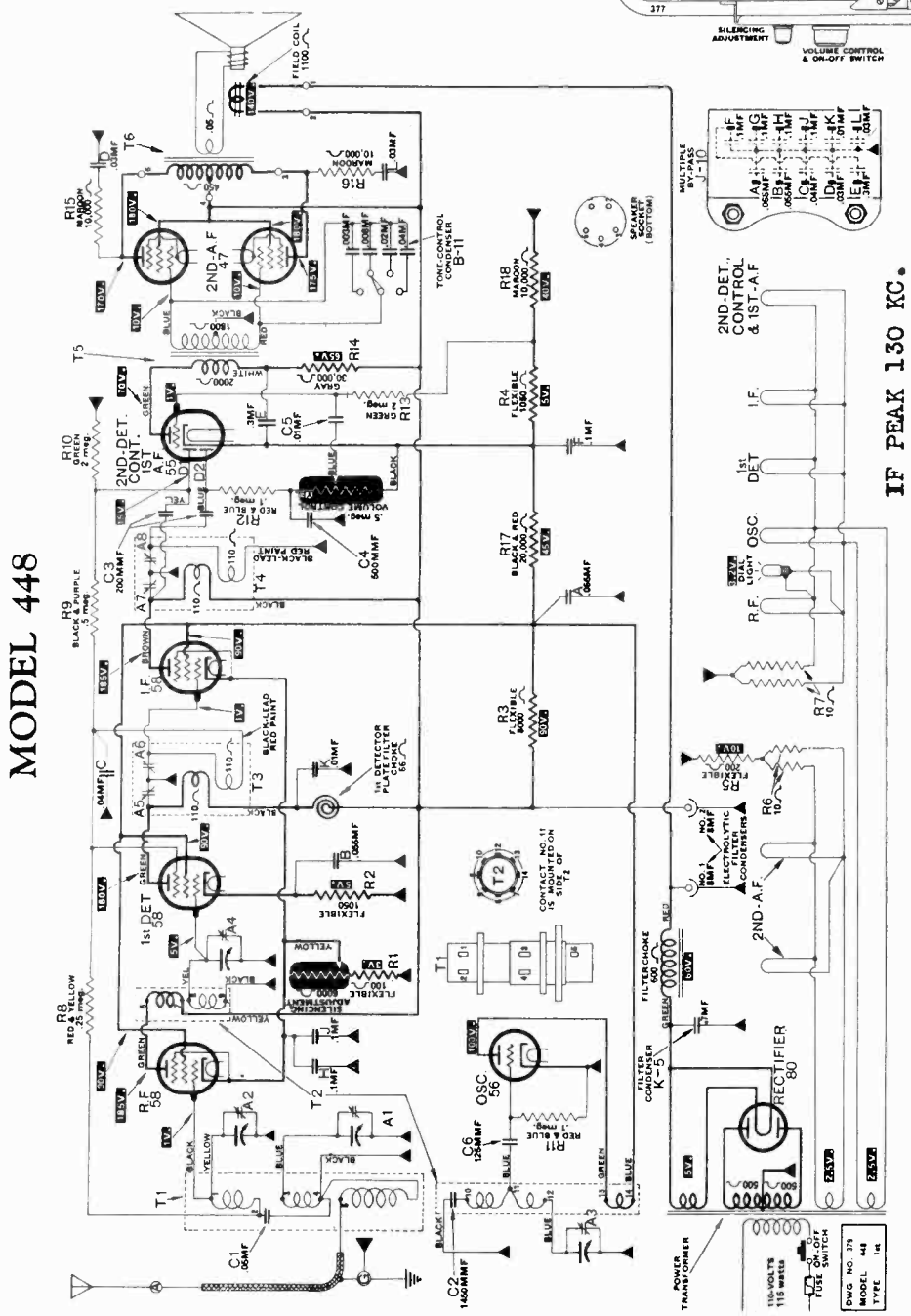
Condensers C15 and C16 are .05MF in late sets.

A fixed condenser (not shown above) is connected across the primary of T5. This condenser is listed as C20, .01MF, 200 volts.

MODEL 448
Schematic, Voltage
Socket

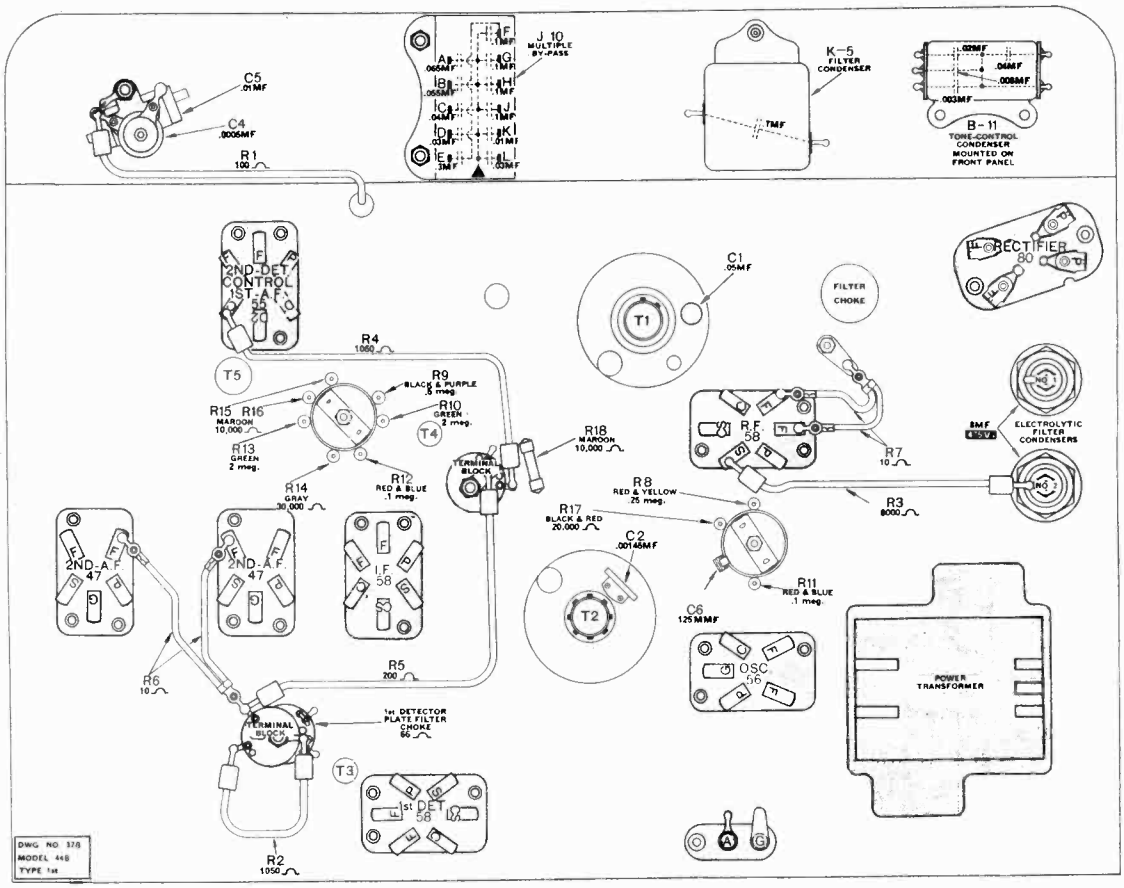
ATWATER KENT MFG. CO.





ATWATER KENT MFG. CO.

MODEL 448
Parts List, Chassis



PARTS AND PRICE LIST FOR MODEL 448 No. 32400

Part No.	Name of Part	List Price
23228	VOLUME CONTROL, complete less leads	$ .75
21530	TONE CONTROL CONDENSER (B-11)	.65
24711	SILENCING ADJUSTMENT	.85
28680	POWER TRANSFORMER	4.75
30910	FILTER CHOKE UNIT	1.55
19210	1st. DETECTOR PLATE FILTER CHOKE	.15
22538	ELECTROLYTIC FILTER CONDENSER NO. 1	1.00
22538	ELECTROLYTIC FILTER CONDENSER NO. 2	1.00
26620	FILTER CONDENSER (K-5) paper and foil	.75
30720	MULTIPLE BY-PASS CONDENSER (J-10)	1.25
18534	LINE FUSE	.03
24211	INSTRUCTION AND LOG CARD F-1041 Net	.01
24712	PANEL CARD F-1055 Net	.02

TUBULAR RESISTORS (½ Watt)

Dia. Code No.	Part No.	Color	Value	List Price
R- 8	20920	Red-yellow	250,000 Ohms	$ .10
R- 9	20930	Black-purple	500,000 Ohms	.10
R-10	20940	Green	2,000,000 Ohms	.10
R-11	20980	Red-blue	100,000 Ohms	.10
R-12	20980	Red-blue	100,000 Ohms	.10
R-13	20940	Green	2,000,000 Ohms	.10
R-14	20970	Gray	30,000 Ohms	.10
R-15	20950	Maroon	10,000 Ohms	.10
R-16	20950	Maroon	10,000 Ohms	.10
R-17	23120	Red-black	20,000 Ohms	.10
R-18	20950	Maroon	10,000 Ohms	.10

	Dia. Code No.	Part No.	Value	List Price
Small Fixed Condensers	C-1	26820	.05 MF	$ .20
	C-2	26690	1450 MMF	.35
	C-3	30240	250 MMF (2 used)	.15
	C-4	17440	.0005 MF	.15
	C-5	23250	.01 MF	.31
Flexible Resistors	R-1	20040	100 Ohms	.17
	R-2	16320	1050 Ohms	.15
	R-3	24340	8000 Ohms	.21
	R-4	16320	1050 Ohms	.15
	R-5	25950	200 Ohms	.17
	R-6	17077	10 Ohms	.12
	R-7	17077	10 Ohms	.12
		31860	1 Ohm, dial light resistor (late sets)	.17

TRANSFORMERS

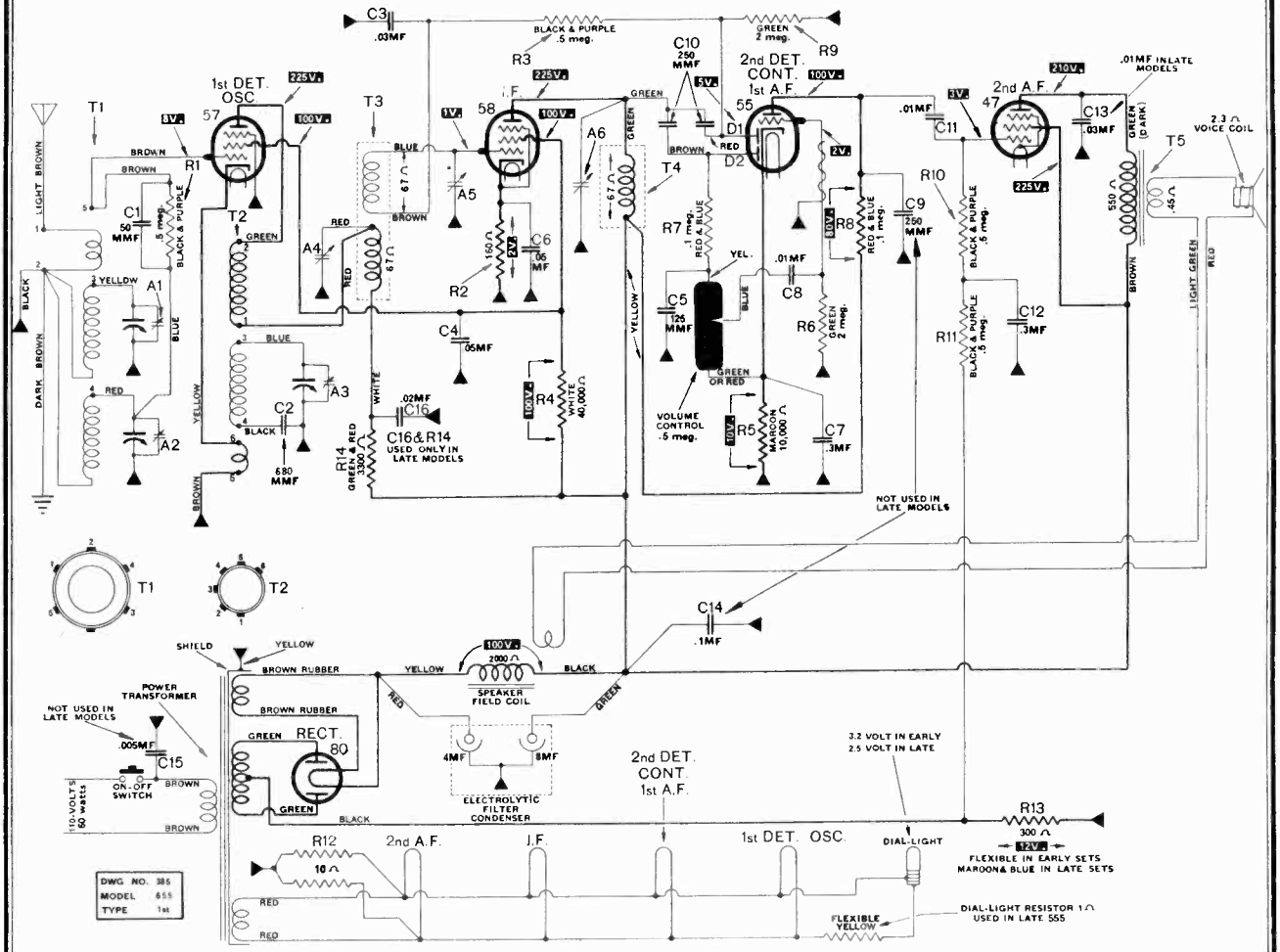
Dia. Code No.	Part No.	Description	List Price
T-1	28480	No. 1 R.F. Transformer	$ 1.00
T-2	30810	No. 2 R.F. Transformer and oscillator	1.00
T-3	23356	No. 1 I.F. Transformer, less trimmers	.75
T-4	22059	No. 2 I.F. Transformer, less trimmers	.75
T-5	30920	Audio transformer unit	1.85
T-6	21693	Output transformer, less case	1.50

No. 28800 TYPE 380 SPEAKER USED IN MODEL 448

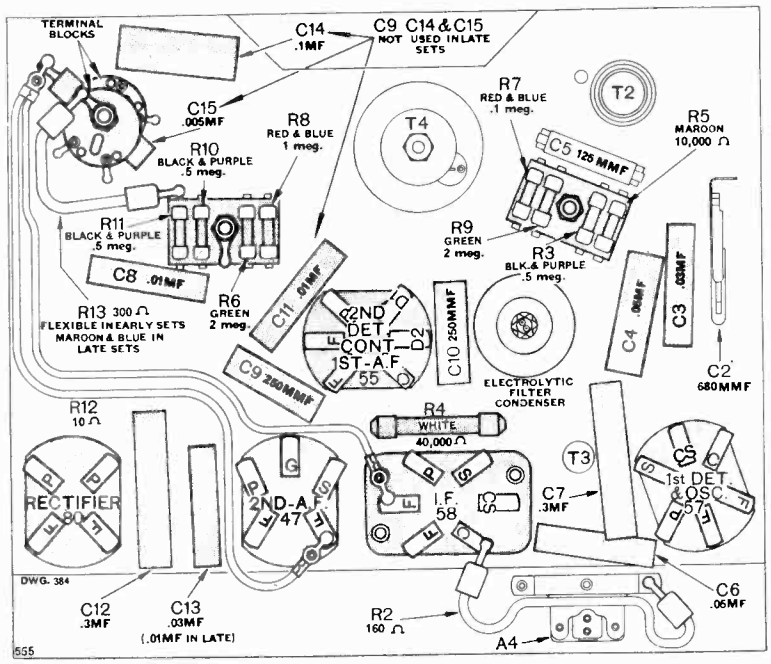
Part No.	Name of Part	List Price
20737	Diaphragm	$ 1.25
21260	Field coil	1.25
20657	Cable and plug assembly	$ .65

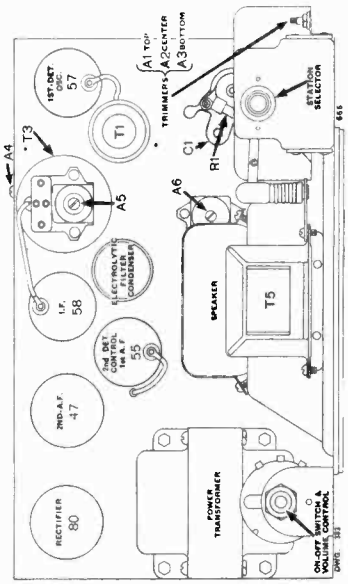
MODEL 555
Schematic, Voltage
Chassis, Socket

ATWATER KENT MFG. CO.



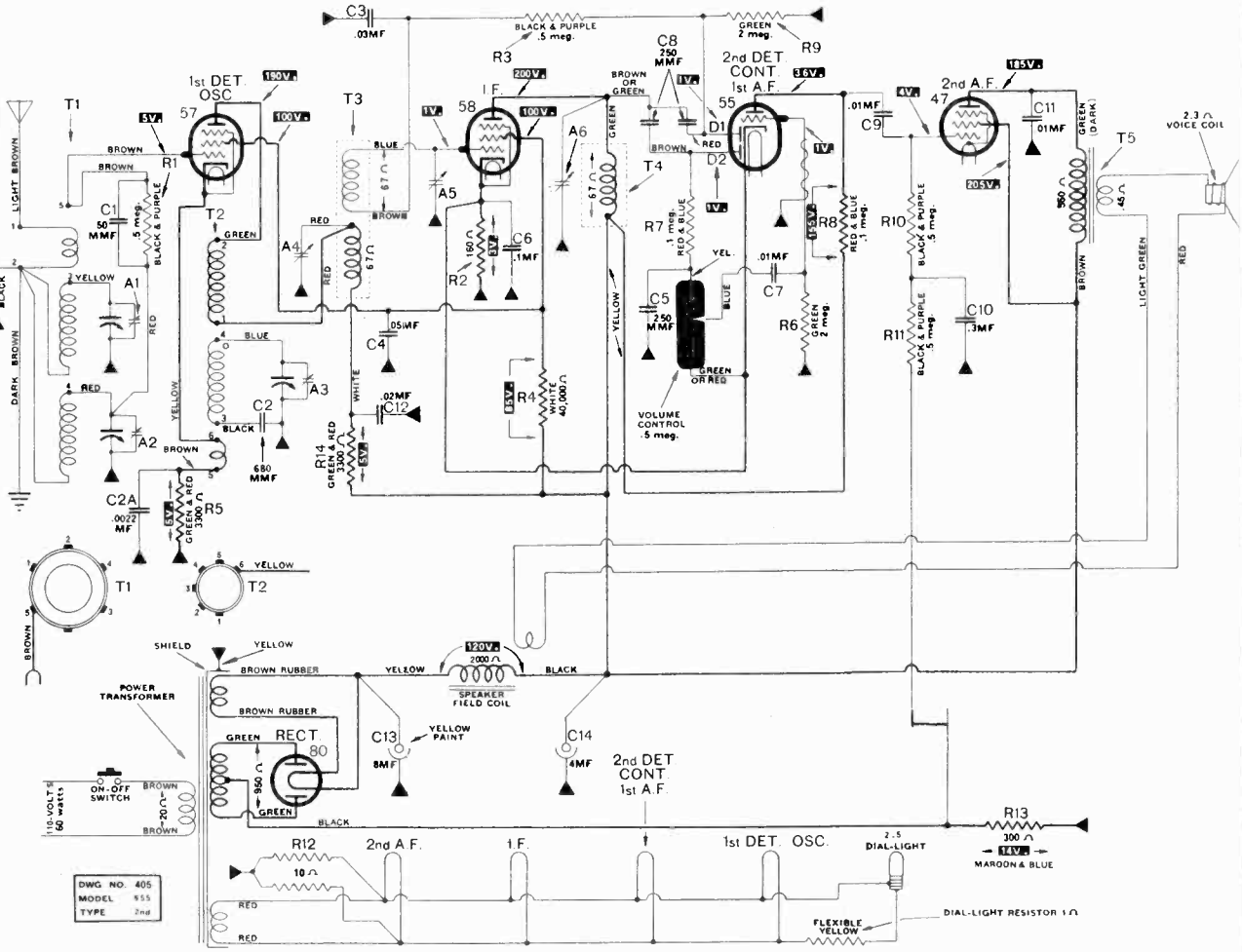
IF PEAK 262.5 KC.



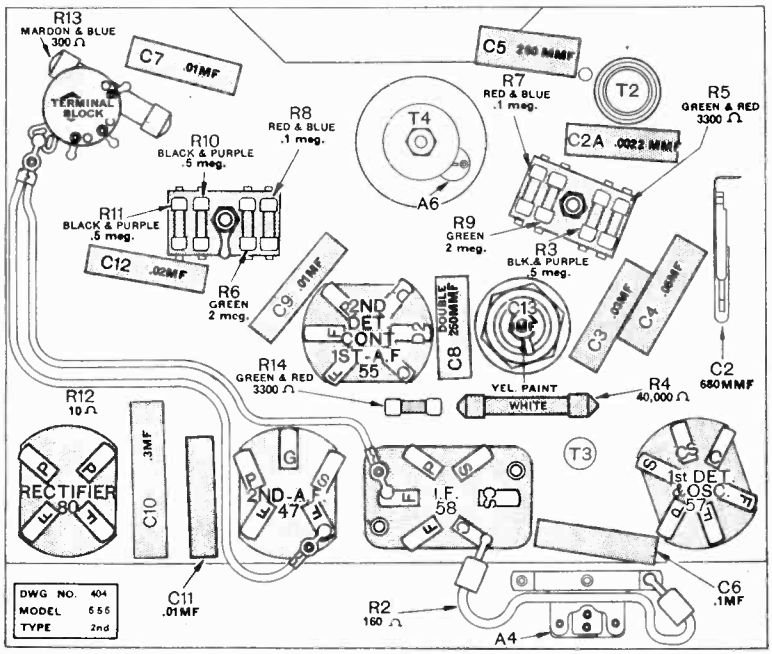


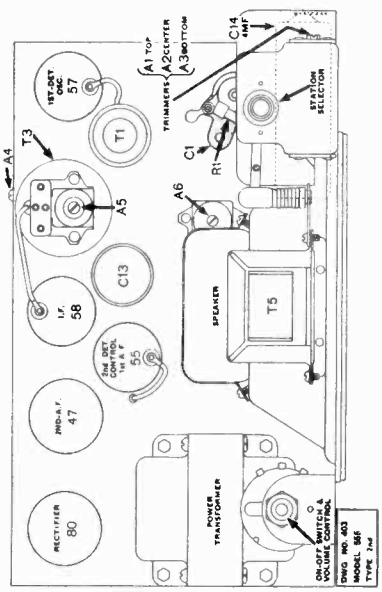
ATWATER KENT MFG. CO.

MODEL 555 (2nd type)
Above serial 5063260
Schematic, voltage



IF PEAK 262.5 KC.





MODEL 636
Parts List

ATWATER KENT MFG. CO.

Part No.	Name of Part	List Price
24472	Set container, less lid	$ 3.60
24335	Set container lid	.40
24473	Tuning dial housing	1.20
24095	Dial assembly	.30
24083	Escutcheon	.70
24334	Escutcheon spacing bushing	.60/C
21407	Dial light 6-8 V	.20
24256	Dial light socket	.12
24169	Dial knob	.20
24098	Volume control .5 meg	.55
24075	Volume control mounting bracket	.10
24169	Volume control knob	.20
20093	Volume control mounting nut	.02
21491	Lock switch	.40
20976	Key	.05
24842	Variable condenser rotor, stator and frame	3.75
24145	Dial knob shaft	.04
20116	Dial knob shaft bracket	.20
17961	Dial rubber and bushing	.15
24142	Dial gear and balance weight	.30
24111	Chassis-to-speaker cable and plug (5 wires 3' 6" long)	1.65
18582	Speaker plug (5 prongs)	.15
24452	Antenna lead shielding	.15
24453	Antenna lead insulation (rubber tubing 24" long)	.05
22027	Antenna lead bushing clamp	.04
24946	Operation & installation instructions, net	.05
24268	Shipping container net	.30

TRANSFORMERS

Dia. Code No.	Part No.	Description	List Price
T-1, T-2, T-3	25013	R. F. Transformer group	$ 3.00
T-4	24296	I. F. Transformer	.70
T-5	24175	Audio input transformer	2.40
T-6	24357	Audio output transformer	1.75

CONDENSERS

C-1	30260	50 MMF, 450-volts	$ .15
C-2	30580	775 MMF (marked "750 MMF" on some units)	.35
C-3	**30240	250 MMF, 200-volts	.15
C-4	**30240	250 MMF, 200-volts	.15
C-5	23250	.01 MF, 450-volts	.31
C-6	30240	250 MMF, 200-volts	.15
C-7	26660	.1 MF, 200-volts	.25
C-8	*27630	.01 MF, 200-volts	.20
C-9	*27630	.01 MF, 200-volts	.20
C-10	26660	.1 MF, 200-volts	.25
C-11	26660	.1 MF, 200-volts	.25
K-8	31670	Double 1 MF, 100-volts	.90
J-8	30470	Multiple by-pass	1.25
	24298	Dry electrolytic filter condenser 8 MF 250-volts	.65

*In late sets, C-8 and C-9 are combined in one double condenser No. 31190. List Price $.23.
**In late sets, C-3 and C-4 are combined in one double condenser No. 31140. List Price $.20.

RESISTORS

R-1	21030	2000 ohms	$ .16
R-2	20040	100 ohms	.17
R-3	17380	425 ohms	.15
R-4	30350	Black-purple 500,000 ohms 1/3 watt	.10
R-5	30360	Blue-gray 1,000,000 ohms 1/3 watt	.10
R-6	30380	Red-green 3,300 ohms 1/3 watt	.10
R-7	30360	Blue-gray 1,000,000 ohms 1/3 watt	.10
R-8	23120	Red-black 20,000 ohms 1/2 watt	.10
R-9	30360	Blue-gray 1,000,000 ohms 1/3 watt	.10
R-10	30380	Red-green 3,300 ohms 1/3 watt	.10

(R-10 is not used in early sets)

TRIMMER CONDENSERS

A-4 & A-5	30750	Double I. F. Trimmer	$ .35
A-6	30760	Single I. F. Trimmer	.25

CHOKES

Part No.	Name of Part	List Price
24297	I. F. Plate choke	$ .40
30690	2nd Detector plate choke	.30
*19210	1st Detector plate filter choke	.15
17015	R. F. Choke	.25
**31680	"A" Filter choke unit	1.00
22359	"B" Filter choke unit	.85

*Not used on late sets.
**Not used on early sets

SOCKETS

21041	5-Prong tube socket	$ .18
22733	6-Prong tube socket	.10
17377	Socket insulator	.10/C

DYNAMOTOR

30870	DYNAMOTOR & FILTER assembly, complete with container and lid	$19.50
30860	Dynamotor & filter assembly, less container and lid	17.25
24148	Dynamotor container, less lid	1.85
24149	Dynamotor container lid	.40
24146	Dynamotor mounting stud	.10
24164	Dynamotor mounting nut	.30/C
30770	Dynamotor terminal block	.30
24096	Dynamotor only	16.00
24978	Cover	1.55
24984	Cover mounting nut	.04
24985	Cover mounting lockwasher	.02
24979	Field coils (set of 2)	1.60
24993	Field coil wedges	.03
24988	Field studs	.10
24991	Field stud sleeve No. 1	.06
24992	Field stud sleeve No. 2	.06
24981	Armature complete	11.50
24982	Brush holder plate complete with brushes (low voltage side)	1.40
24976	Brush (low voltage side)	.15
24983	Brush holder plate complete with brushes (high voltage side)	1.40
24977	Brush (high voltage side)	.15
24987	Brush holder spring	.10
24986	Brush holder spring insulating eyelet	.02
24994	Brush holder sleeve	.06
24995	End play washer .246" x 27/32" x 1/32"	.02
24996	End play washer 17/64" x 1/2" x 1/32"	.02
24997	End play washer 17/64" x 1/2" x .007"	.02
24989	Insulating bushing (rubber)	.05

MISCELLANEOUS PARTS

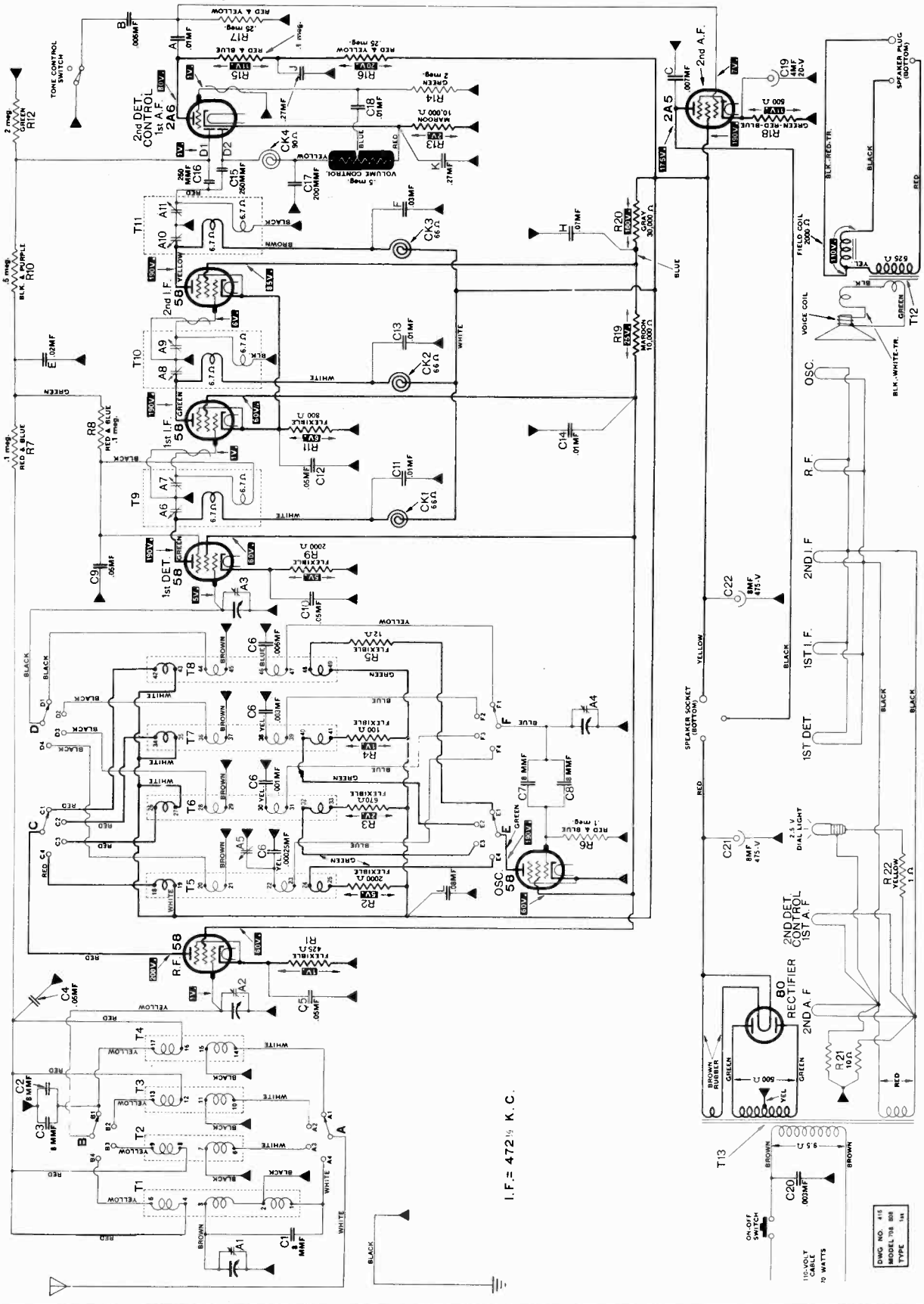
24137	Set container mounting rod	$ .30
24109	Cast dash bushing	.08
24415	Mounting lockwasher 5/16"	.25/C
24416	Mounting nut 5/16"	.55/C
24246	Instrument panel mounting strip	.22
24413	Instrument panel mounting screw, 1/4"—1" long	.35/C
24414	Dynamotor container mounting screw, 1/4"—2 1/2" long	.02
24164	Mounting nut 1/4"	.30/C
21142	Mounting washer 5/16"	.60/C
21141	Mounting lockwasher 1/4"	.30/C
24418	Ground lead and terminal 2 ft. long	.20
24336	R. F. Transformer shield	.30
24459	I. F. Transformer shield	.25
24458	I. F. Plate choke shield	.20
24273	Shielded grid lead & cap	.10
24409	Aluminum disc shield	.07
24267	Clamp for No. 24111 cable	.03

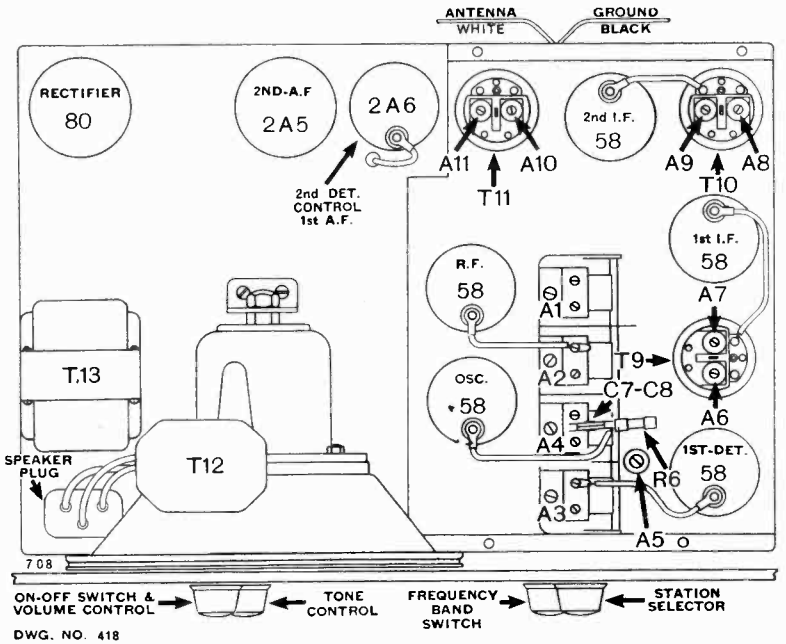
INTERFERENCE SUPPRESSOR PARTS

21143	Spark plug suppressor	$ .30
21144	Distributor suppressor	.30
23520	Ignition filter	2.00
23260	Generator condenser	1.05

ATWATER KENT MFG. CO.

MODEL 708,808
Schematic,Voltage

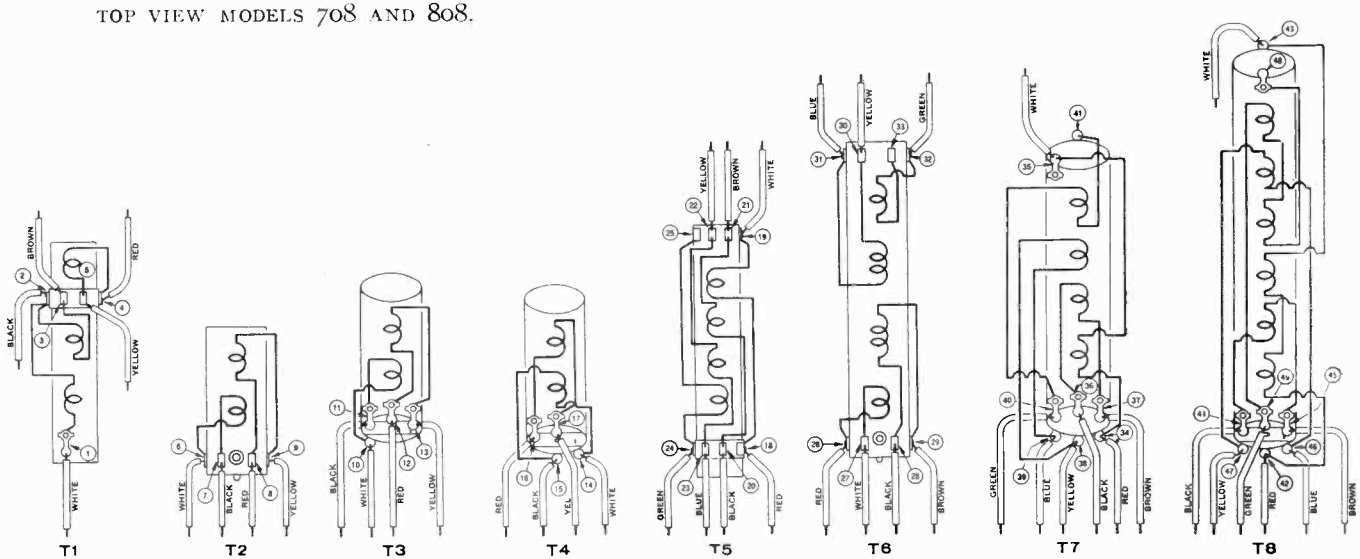




TOP VIEW MODELS 708 AND 808.

Voltages: Voltages are printed on the diagram of the set Readings are made from the cathode of each tube with the 250-volt scale of a 1000-ohm-per-volt D. C. voltmeter, and a line supply of 110 volts. Readings are made with the set in operation, no antenna, with the dial turned to a quiet point, and with the frequency-range switch in the broadcast position.

As the socket contacts of the R. F., 1st-detector, oscillator, and I. F. tubes are not accessible from the bottom for testing, we suggest use of a 58 tube with eight-inch leads soldered to the plate, screen, and cathode contacts. (Use green for plate, blue for screen, and yellow for cathode.) Insert this tube alternately in the different sockets and measure the voltages by making contact to the leads with the voltmeter prongs.



CONNECTIONS OF R. F. TRANSFORMERS IN MODELS 708 AND 808.

MODEL 708, 808
Parts List

ATWATER KENT MFG. CO.

PARTS AND PRICE LIST FOR MODEL 708, PART No. 34200

For parts not listed below, please order by description or name of part and model number of set.

Part No.	Name of Part	List Price
25805	Cabinet, complete	$ 6.75
25023	Variable condenser rotor, stator and frame	2.50
24889	Range switch	1.35
24079	Volume control	.75

TRANSFORMERS

Dia. Code No.	Part No.	Description	List Price
T-1	32650	No. 1 broadcast coil	$ .75
T-2	32670	No. 1 H. F. coil, 1st range	.45
T-3	32690	No. 1 H. F. coil, 2nd range	.65
T-4	32720	No. 1 H. F. coil, 3rd range	.65
T-5	32660	No. 2 broadcast coil	.80
T-6	32680	No. 2 H. F. coil, 1st range	.75
T-7	32710	No. 2 H. F. coil, 2nd range	1.05
T-8	32730	No. 2 H. F. coil, 3rd range	1.35
T-9	25503	No. 1 I. F. transformer, less trimmers	.65
T-10	25503	No. 2 I. F. transformer, less trimmers	.65
T-11	25503	No. 3 I. F. transformer, less trimmers	.65
T-12	21672	Output transformer	1.25
T-13	25221	Power transformer	3.45

CONDENSERS

Dia. Code No.	Part No.	Description	List Price
C-1	27650	8MMF, 500 volts	$ .10
C-2	27650	8MMF, 500 volts	.10
C-3	27650	8MMF, 500 volts	.10
C-4	31160	.05MF, 100 volts, non-inductive	.25
C-5	31160	.05MF, 100 volts, non-inductive	.25
C-6	32480	Tracking condenser assembly	.90
C-7	27650	8MMF, 500 volts	.10
C-8	27650	8MMF, 500 volts	.10
C-9	31160	.05MF, 100 volts, non-inductive	.25
C-10	31160	.05MF, 100 volts, non-inductive	.25
C-11	32810	.01MF, 450 volts, non-inductive	.22
C-12	31160	.05MF, 100 volts, non-inductive	.25
C-13	32810	.01MF, 450 volts, non-inductive	.22
C-14	32810	.01MF, 450 volts, non-inductive	.22
C-15	33620	250MMF, 450 volts	.15
C-16	33620	250MMF, 450 volts	.15
C-17	21160	140-220MMF, 450 volts	.13
C-18	27630	.01MF, 200 volts	.20
C-19	25167	4MF, 20 volts, dry electrolytic	.40
C-20	32740	.003MF, 500 volts	.40
C-21	22538	8MF, 475 volts, electrolytic	1.00
C-22	22538	8MF, 475 volts, electrolytic	1.00
	33060	Multiple by-pass condenser (J-14)	1.25

RESISTORS

Dia. Code No.	Part No.	Description	List Price
R-1	17380	Flexible, 425 ohms	$ .15
R-2	33230	Flexible, 2,000 ohms	.17
R-3	33210	Flexible, 670 ohms	.16
R-4	33220	Flexible, 100 ohms	.16
R-5	33240	Flexible, 12 ohms	.15
R-6	20980	Red-blue, 100,000 ohms, ½ watt	.10
R-7	20980	Red-blue, 100,000 ohms, ½ watt	.10
R-8	20980	Red-blue, 100,000 ohms, ½ watt	.10
R-9	21030	Flexible, 2,000 ohms	.16
R-10	20930	Black-purple, 500,000 ohms, ½ watt	.10
R-11	20120	Flexible, 800 ohms	.15
R-12	20940	Green, 2,000,000 ohms, ½ watt	.10
R-13	20950	Maroon, 10,000 ohms, ½ watt	.10
R-14	20940	Green, 2,000,000 ohms, ½ watt	.10
R-15	20980	Red-blue, 100,000 ohms, ½ watt	.10
R-16	20920	Red-yellow, 250,000 ohms, ½ watt	.10
R-17	20920	Red-yellow, 250,000 ohms, ½ watt	.10
R-18	32010	Blue-red-green, 500 ohms, 1 watt	.15
R-19	20950	Maroon, 10,000 ohms, ½ watt	.10
R-20	29710	Gray, 30,000 ohms, 1½ watts	.20
R-21	17077	Flexible, 10 ohms	.12
R-22	31860	Flexible, 1 ohm	.17

CHOKES

Dia. Code No.	Part No.	List Price
CK-1	19210	$ .15
CK-2	19210	.15
CK-3	19210	.15
CK-4	17015	.25

TRIMMER CONDENSERS

Dia. Code No.	Part No.	Description	List Price
A-5	20190	Single trimmer	$ .25
	32880	Double I. F. trimmer	.30

MISCELLANEOUS PARTS

Part No.	Name of Part	Price
25152	Instruction and log card F-1062	$ .01 net
23184	Wave guide F-1013	.01 net

No. 34300 SPEAKER USED IN MODEL 708

Part No.	Name of Part	List Price
21161	Diaphragm	$ 1.05
18870	Field coil, 2,000 ohms	1.25
21672	Output transformer (T-12)	1.25
25404	Speaker cable and plug	.40

PARTS AND PRICE LIST FOR MODEL 808, PART No. 34600

Below Serial No. 7702748

Only parts different from Model 708 are listed below.

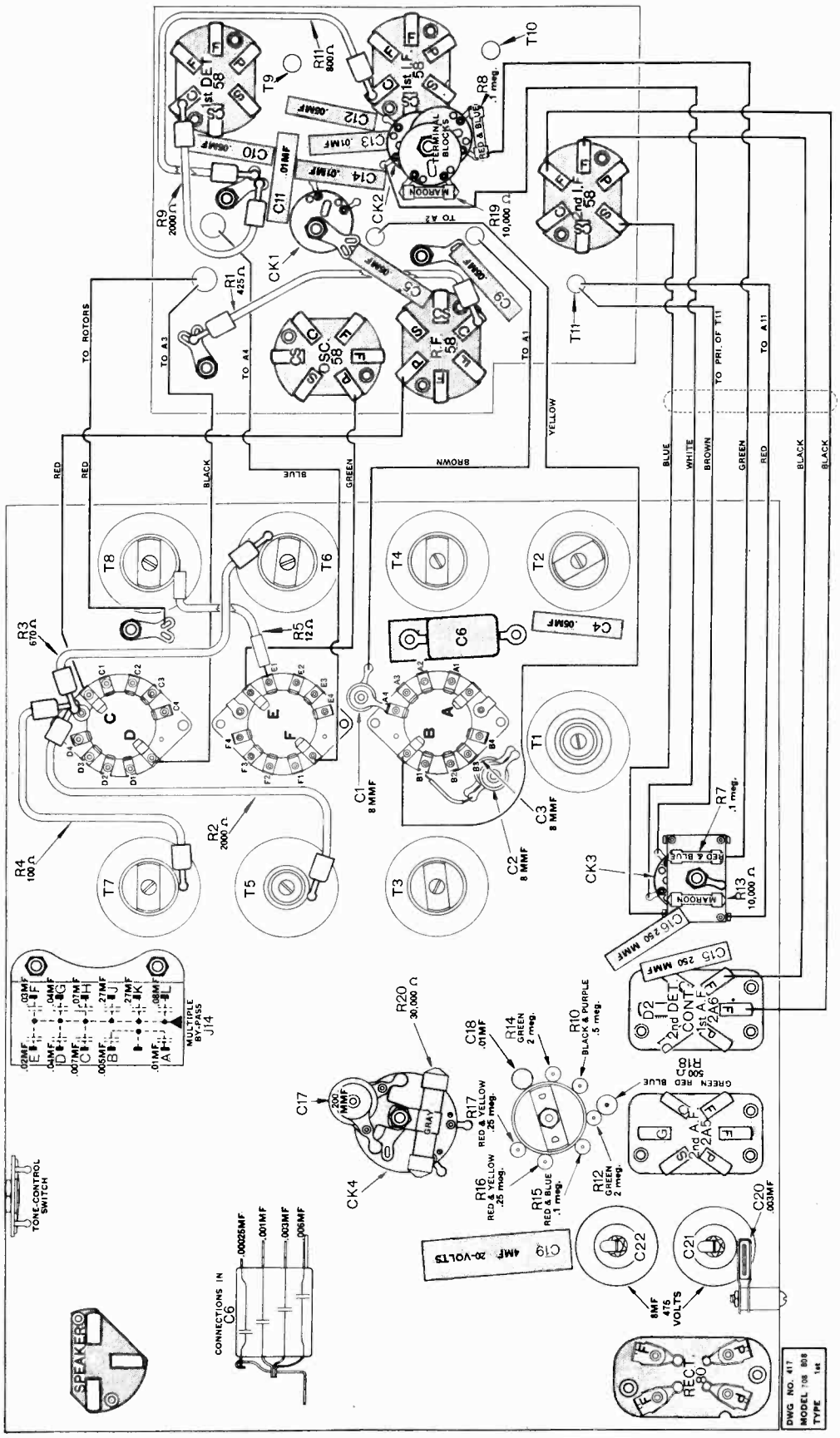
Part No.	Name of Part	List Price
25232	Instruction and log card F-1065	$ .01

No. 34500 SPEAKER USED IN MODEL 808

Part No.	Name of Part	List Price
20737	Diaphragm	$ 1.25
18870	Field coil, 2,000 ohms	1.25
21672	Output transformer (T-12)	1.25
25405	Speaker cable and plug	.50

MODEL 708, 808
Chassis

ATWATER KENT MFG. CO.

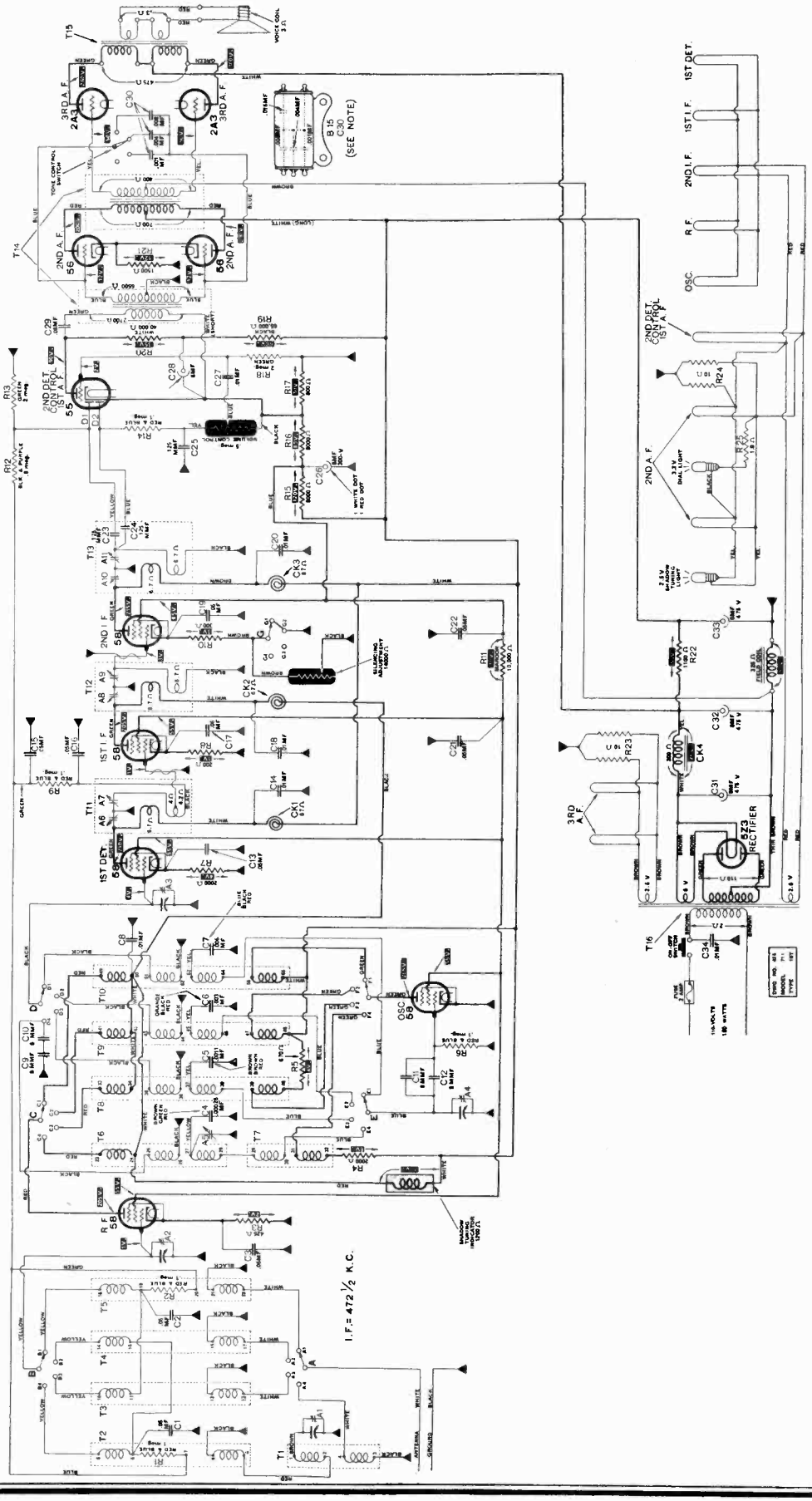


BOTTOM VIEW MODELS 708 AND 808.

ATWATER KENT MFG. CO.

MODEL 711
Schematic, Voltage

DIAGRAM OF MODEL 711

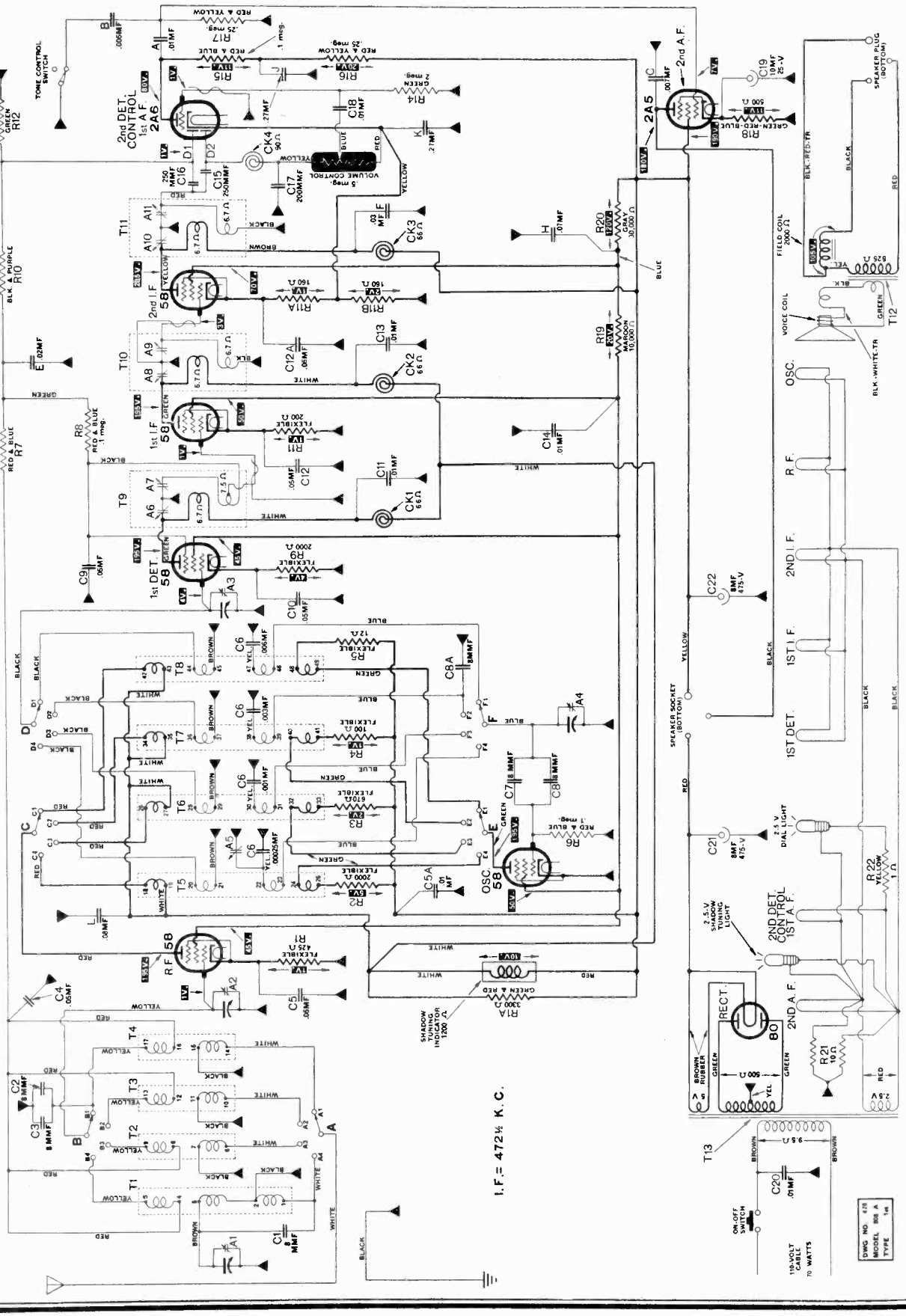


The values shown above for the B-15 tone control condenser are correct. In the supplement of electrical values (December, 1932) the .001 and the .008 MF condensers are interchanged. Please correct the supplement of electrical values to agree with the above diagram.

MODEL 808A
Schematic, Voltage

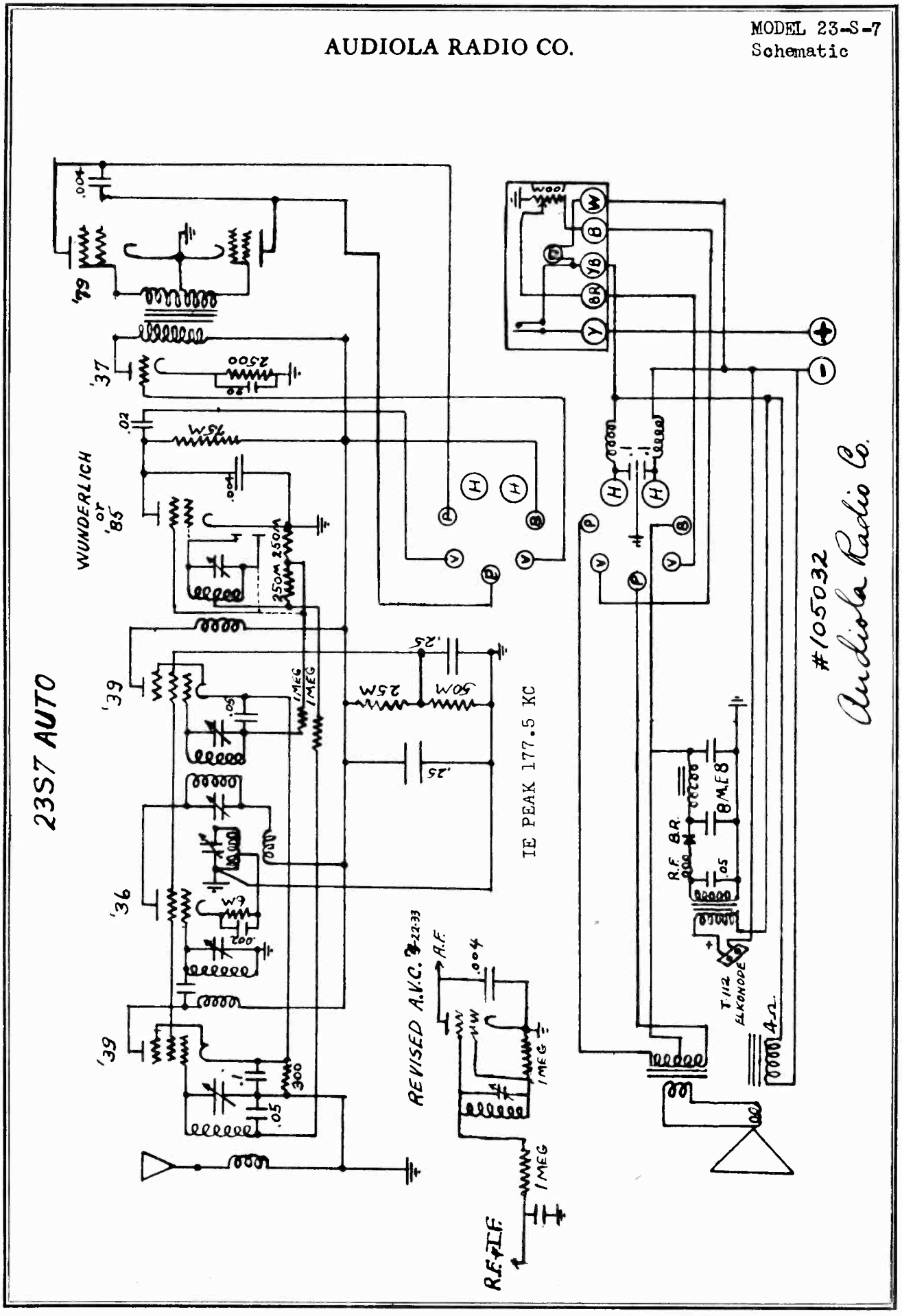
ATWATER KENT MFG. CO.

DIAGRAM OF MODEL 808A



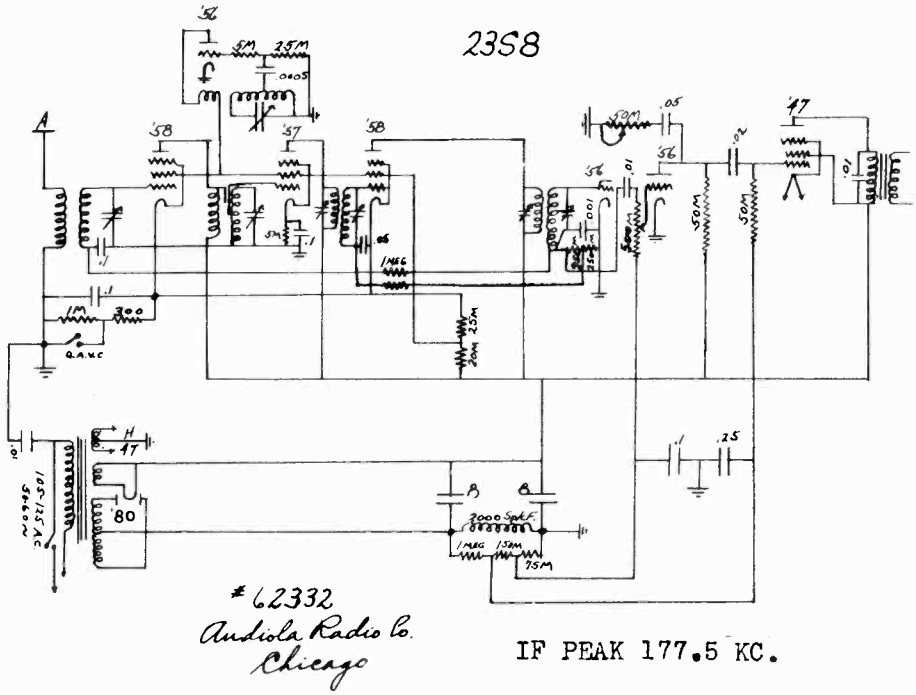
AUDIOLA RADIO CO.

MODEL 23-S-7
Schematic



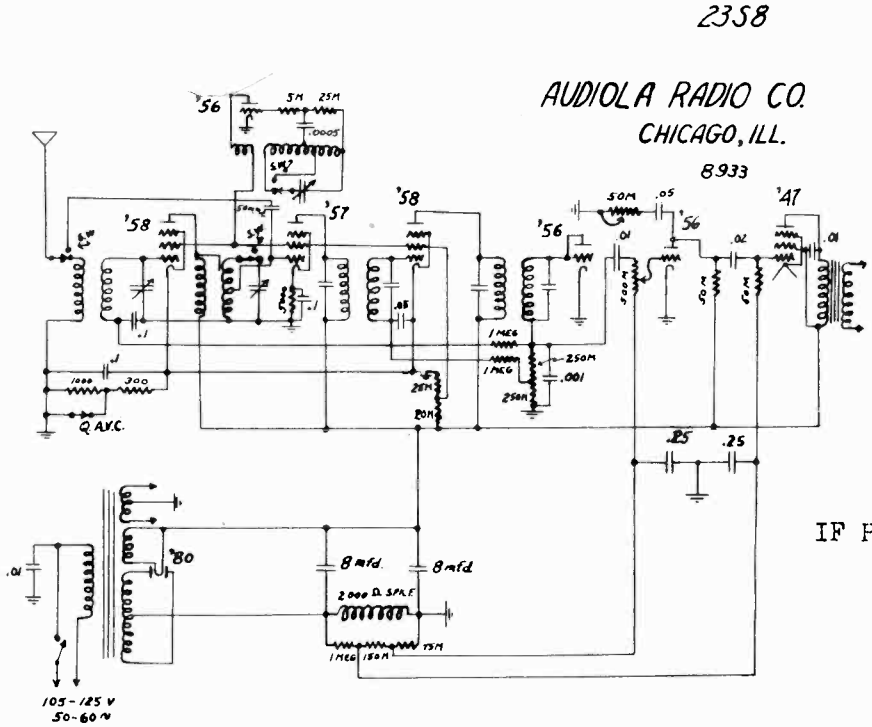
MODEL 23-S-8
Two types

AUDIOLA RADIO CO.



#62332
Audiola Radio Co.
Chicago

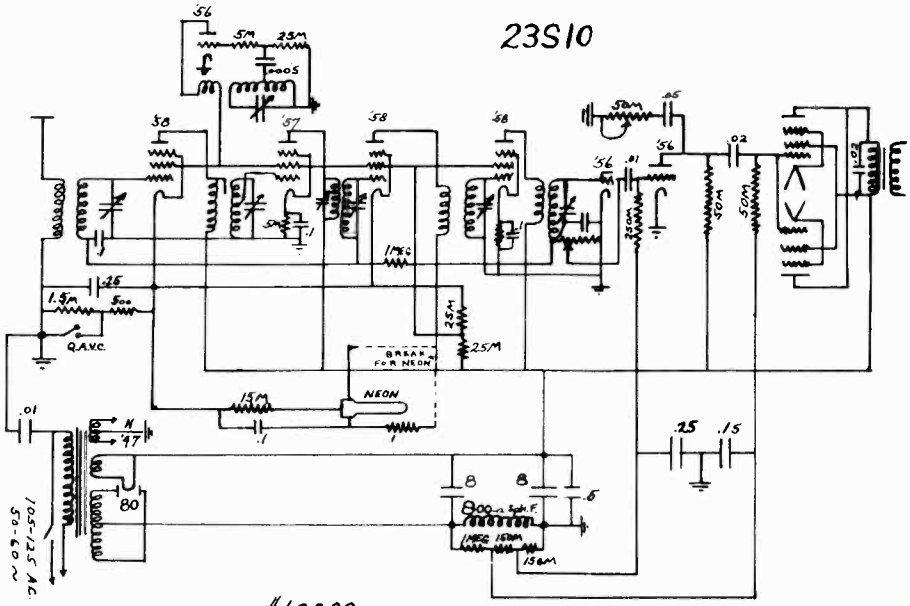
IF PEAK 177.5 KC.



IF PEAK 177.5 KC.

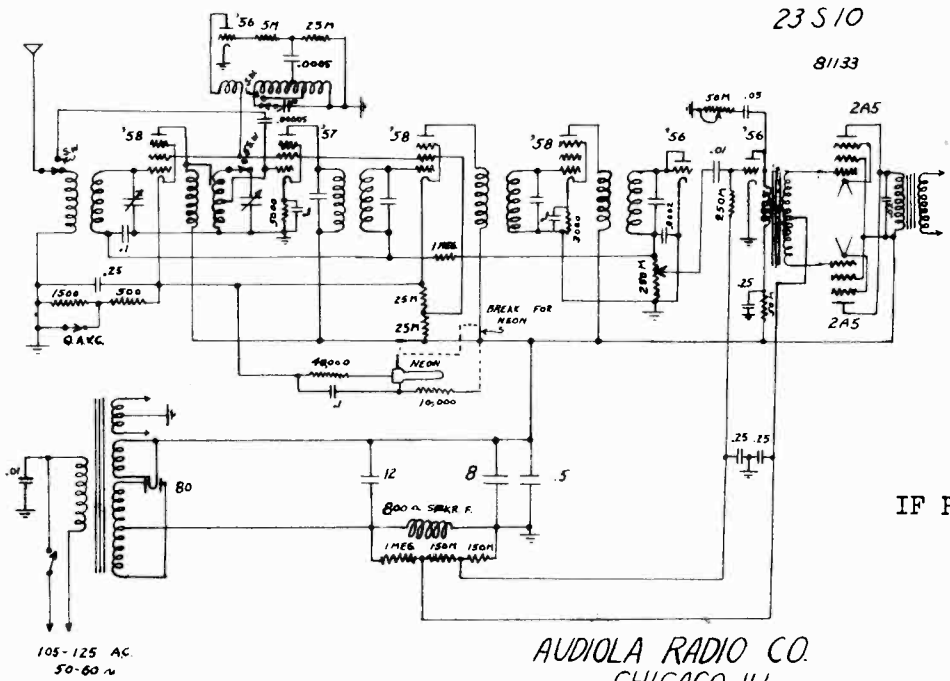
AUDIOLA RADIO CO.

MODEL 23-S-10
Two types



#62232
Audiola Radio Co
Chicago

IF PEAK 177.5 KC.



IF PEAK 177.5 KC.

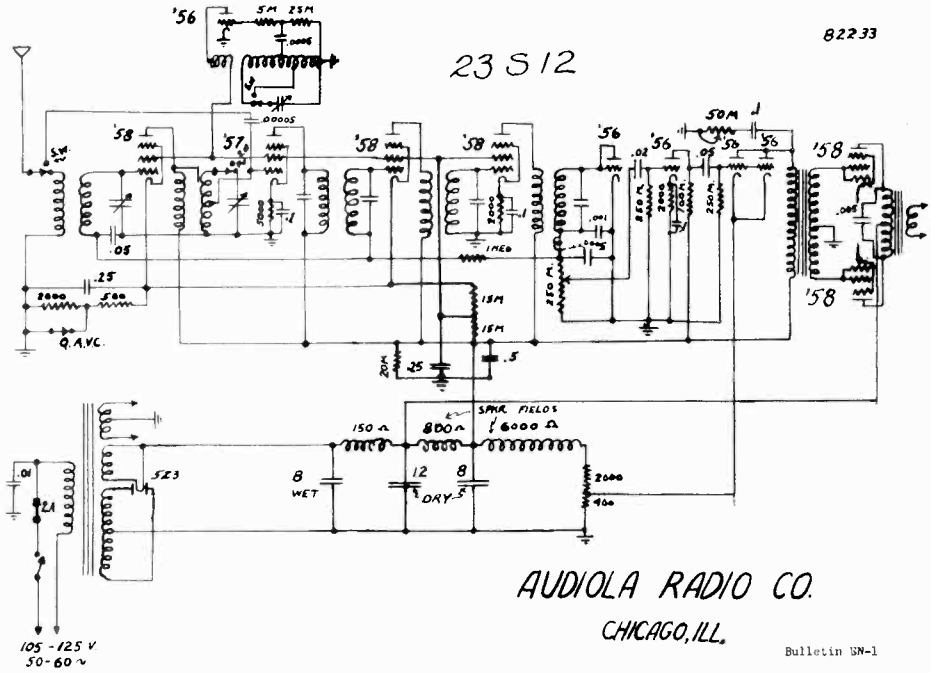
AUDIOLA RADIO CO.
CHICAGO, ILL.

MODEL 23-S-12
MODEL 33-S-8 32V

AUDIOLA RADIO CO.

23 S 12

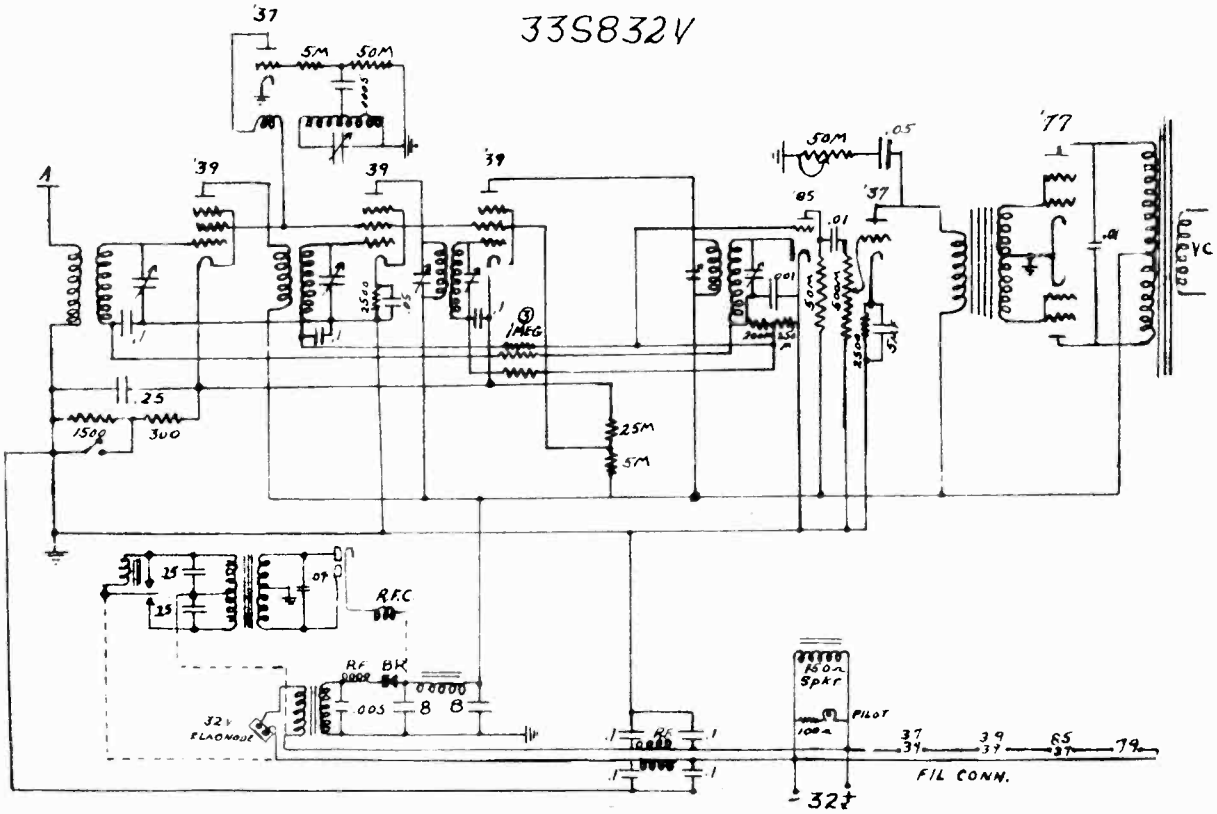
B2233



AUDIOLA RADIO CO.
CHICAGO, ILL.

Bulletin UN-1

33S832V

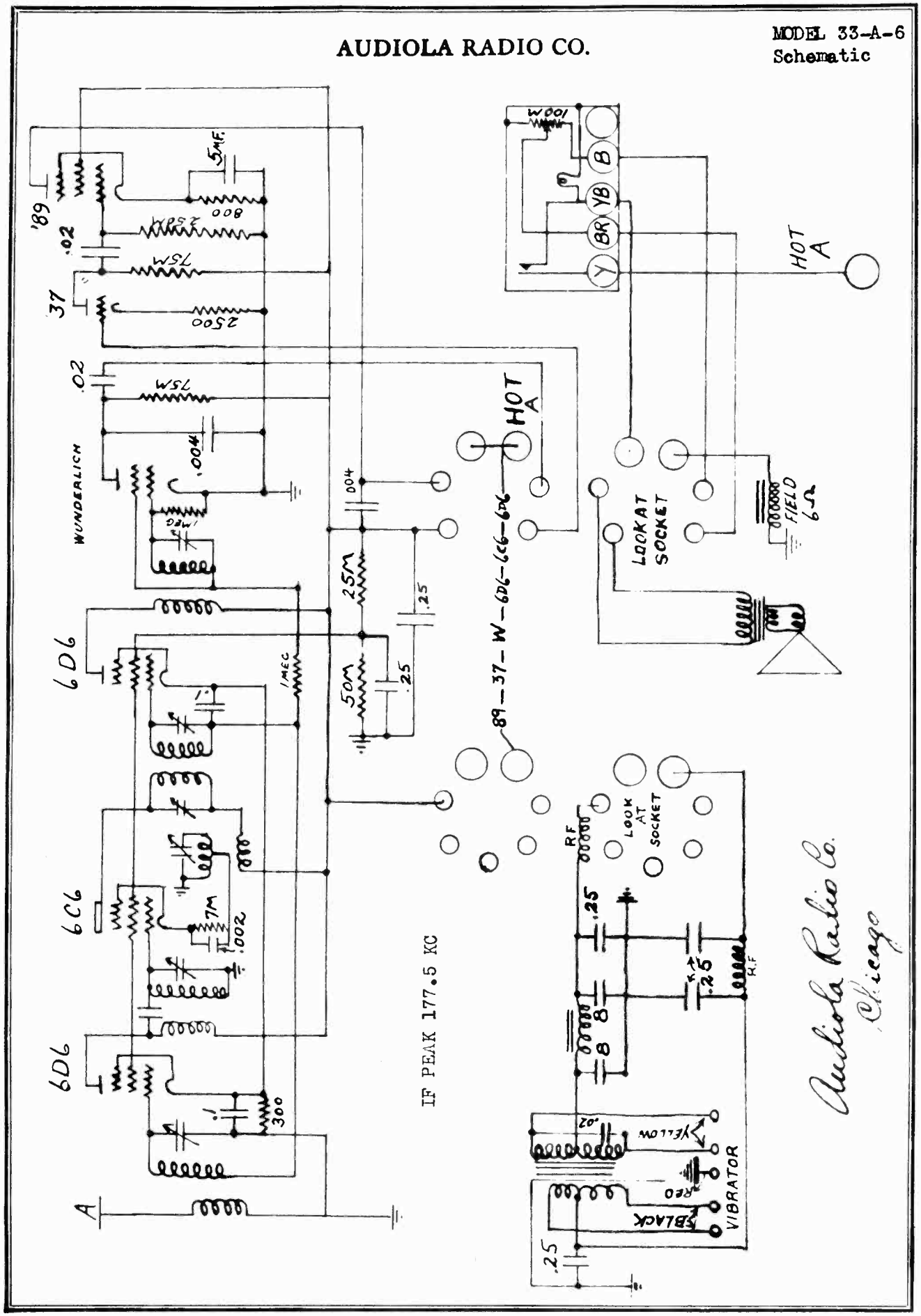


61233

Audiola Radio Co.
Chicago

AUDIOLA RADIO CO.

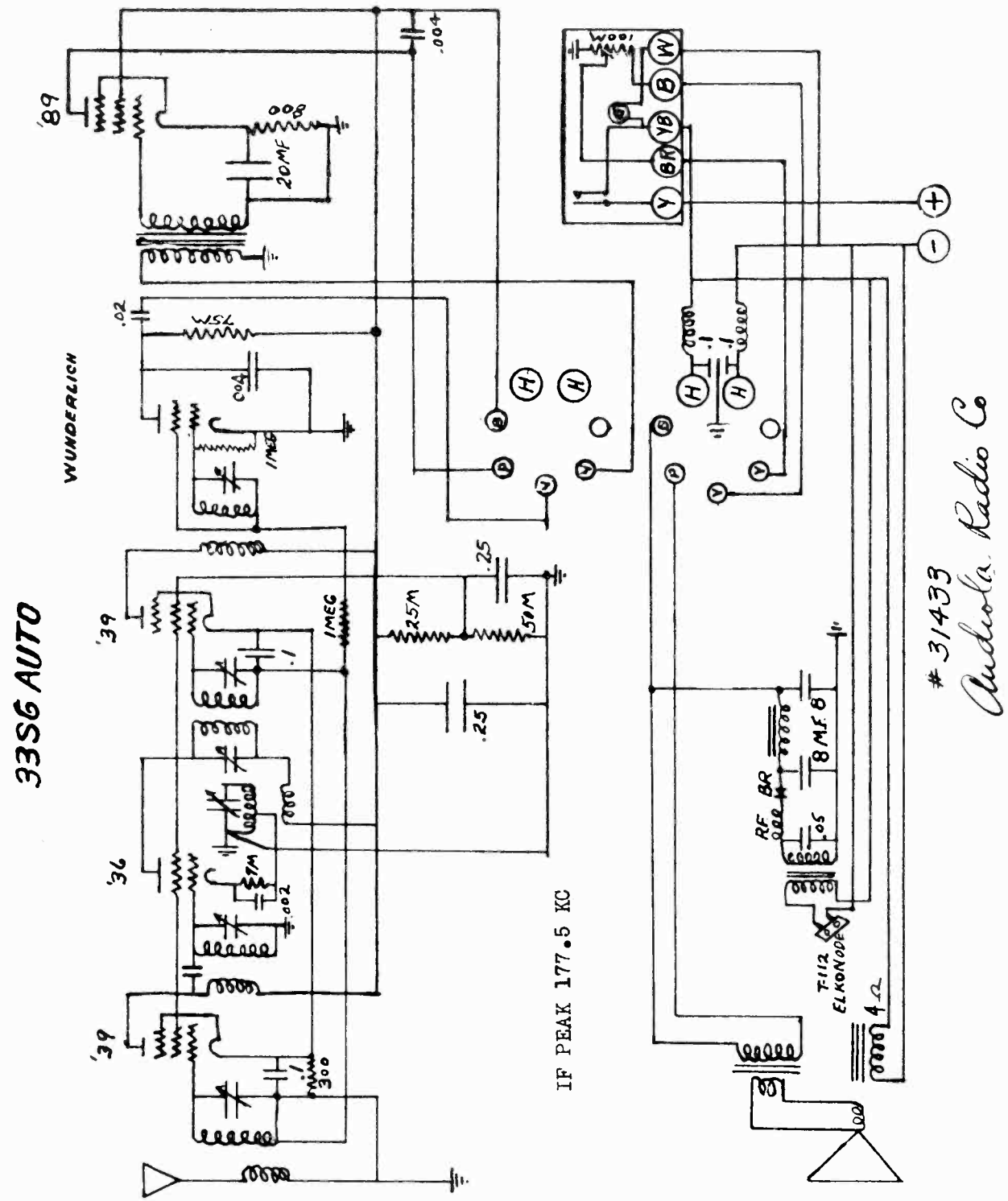
MODEL 33-A-6
Schematic



MODEL 33-S-6
Schematic

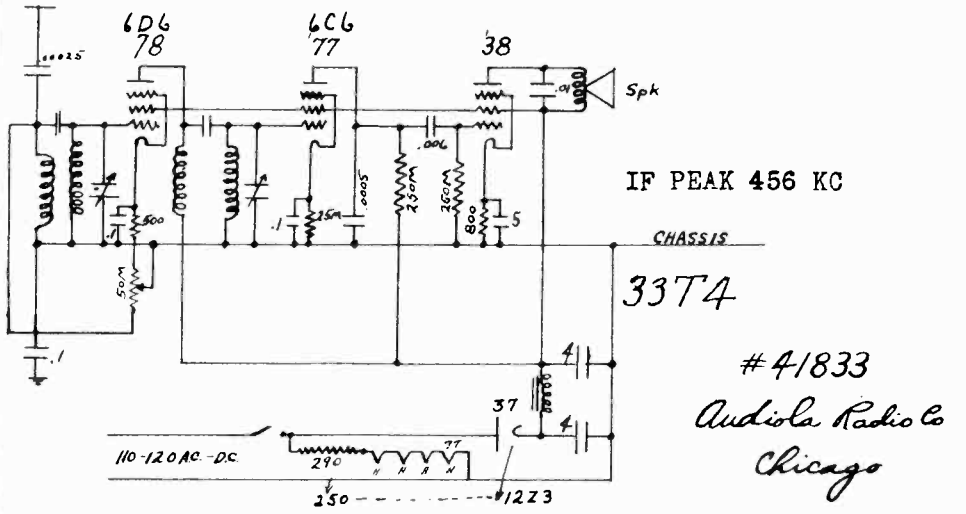
AUDIOLA RADIO CO.

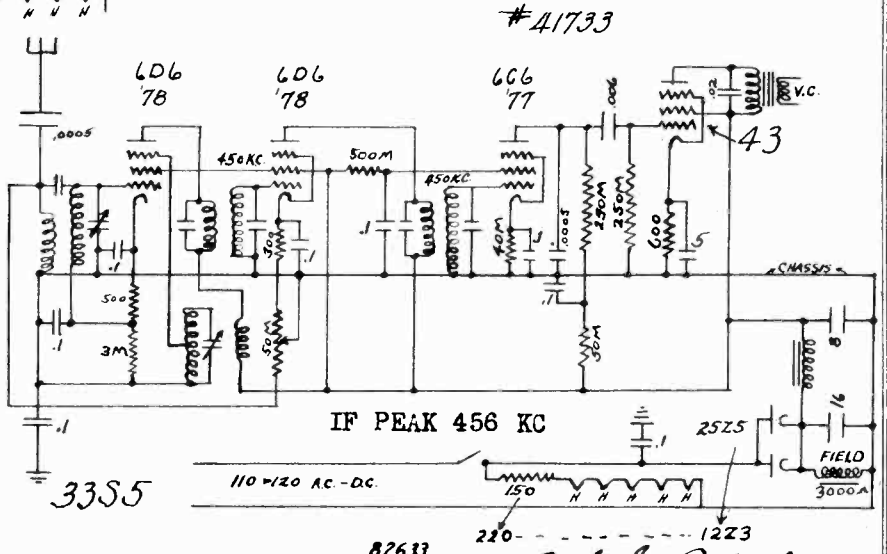
MODEL 33-S-6
Schematic

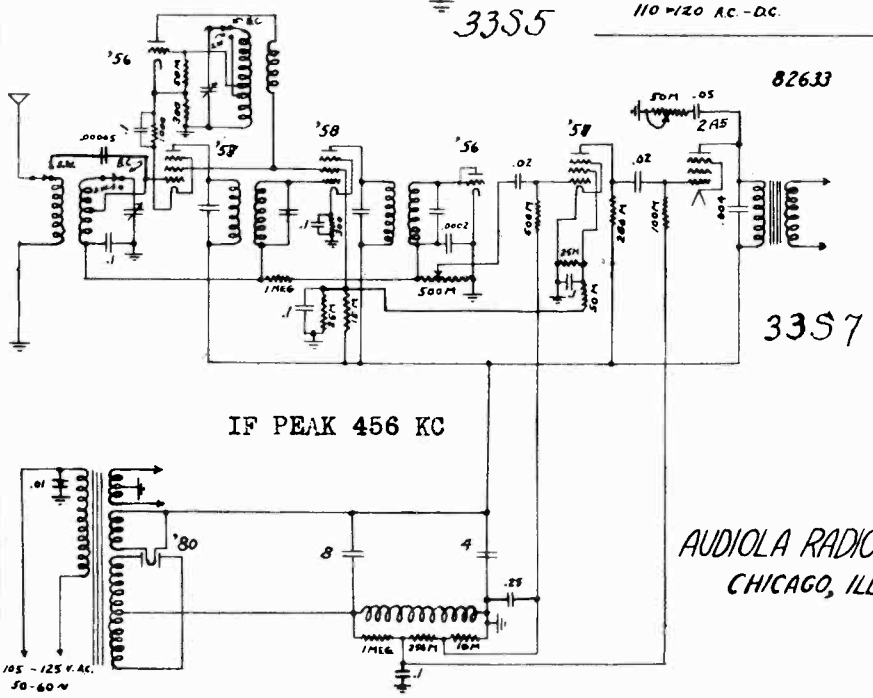


MODEL 33-T-4
MODEL 33-S-5
MODEL 33-S-7

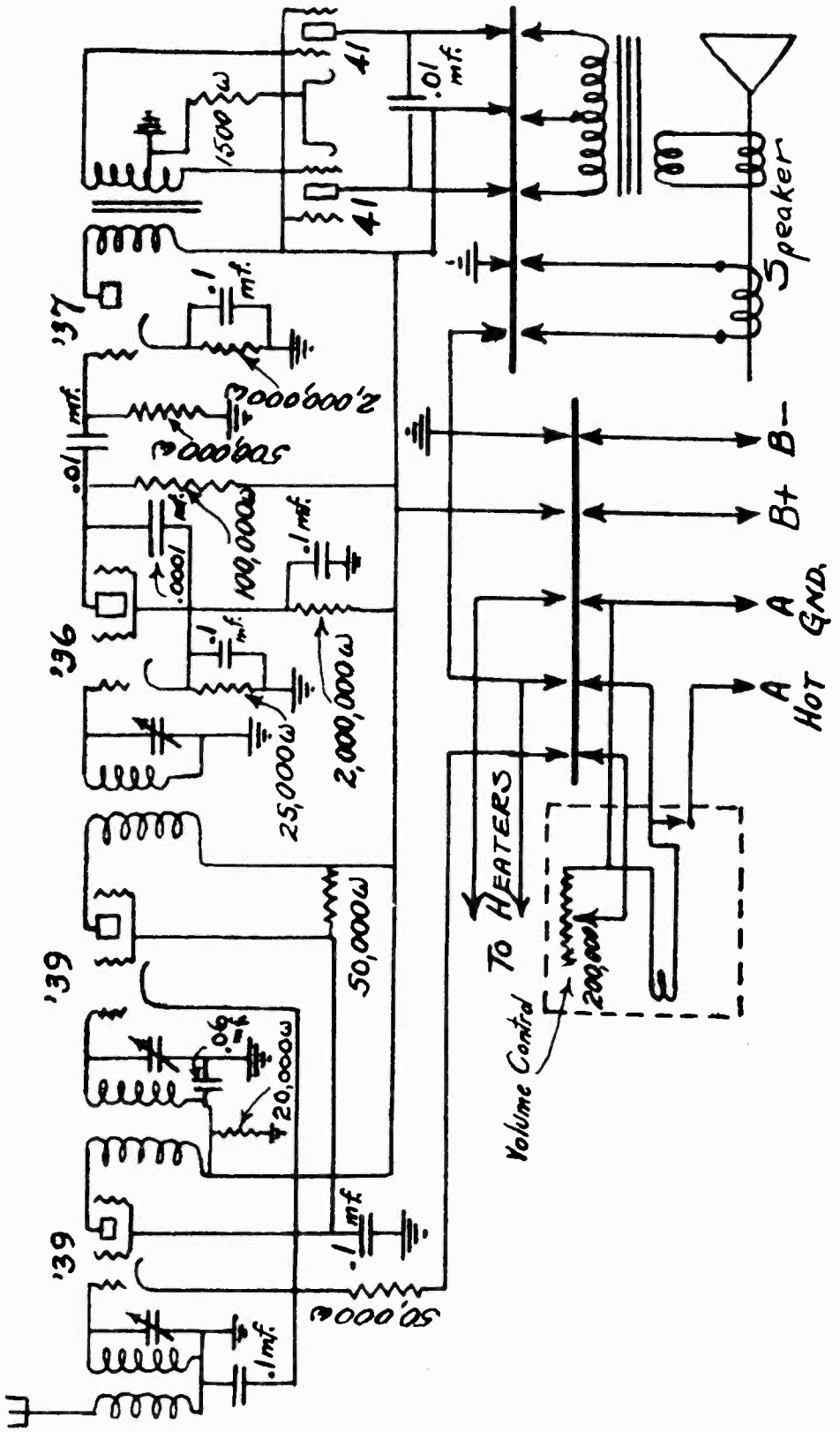
AUDIOLA RADIO CO.





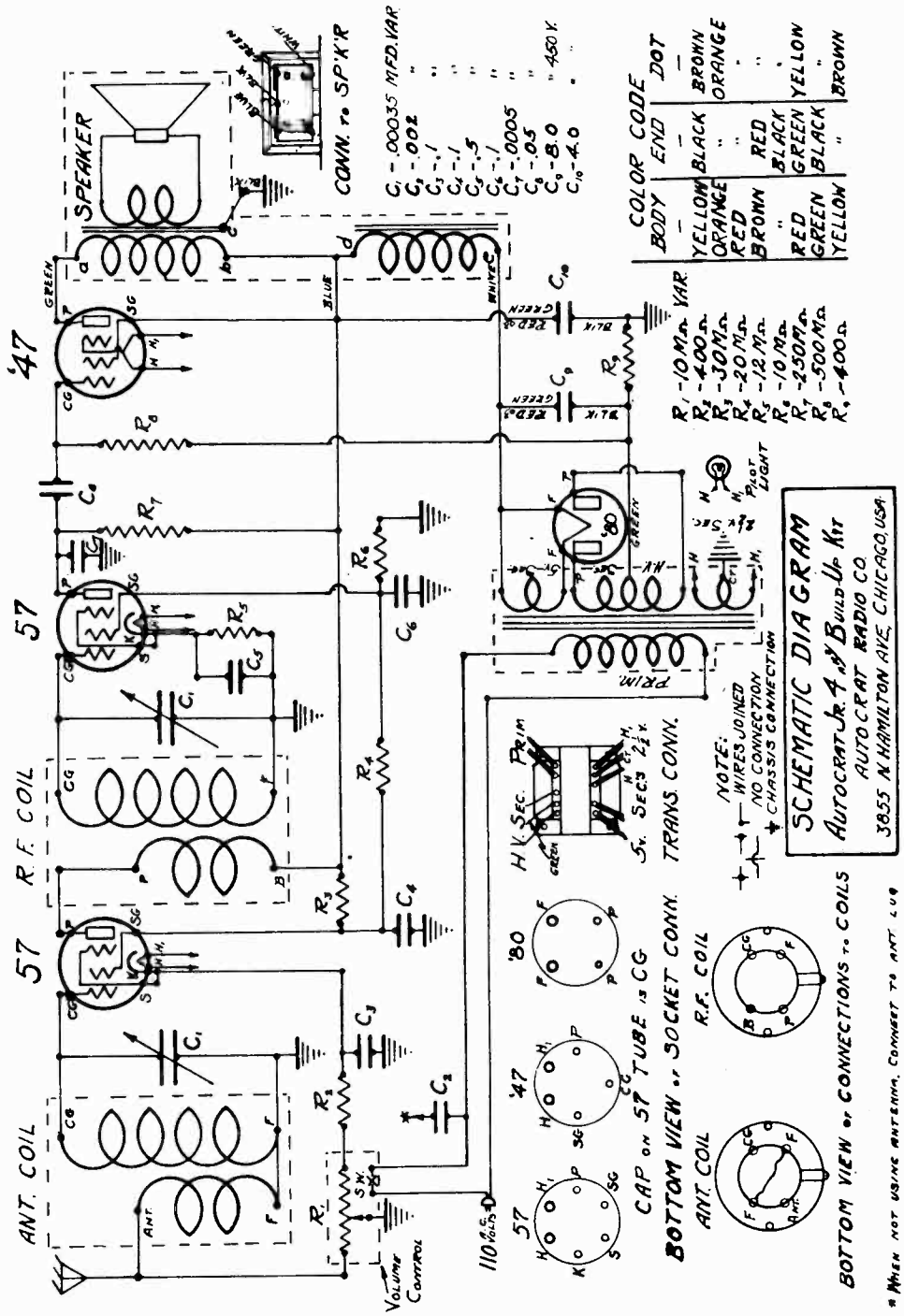


AUTOCRAT RADIO CORP. MODEL TRF-41



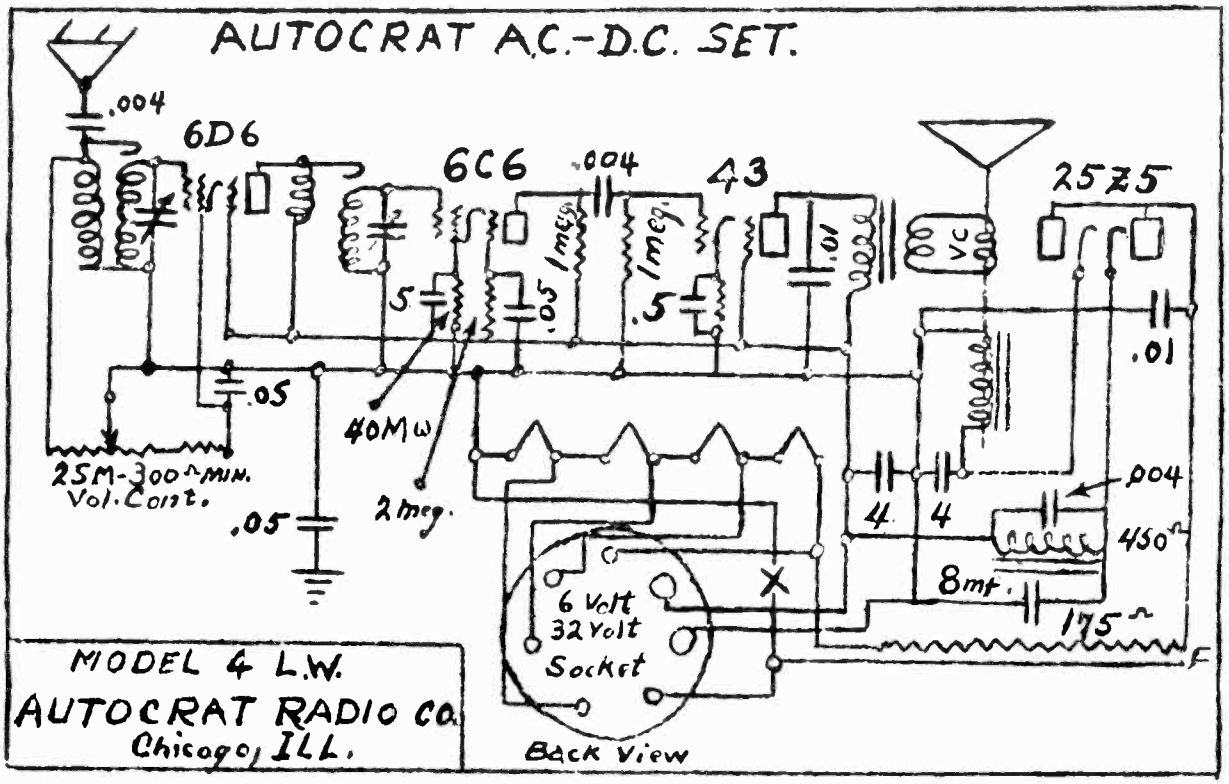
MODEL Autocrat Jr.4

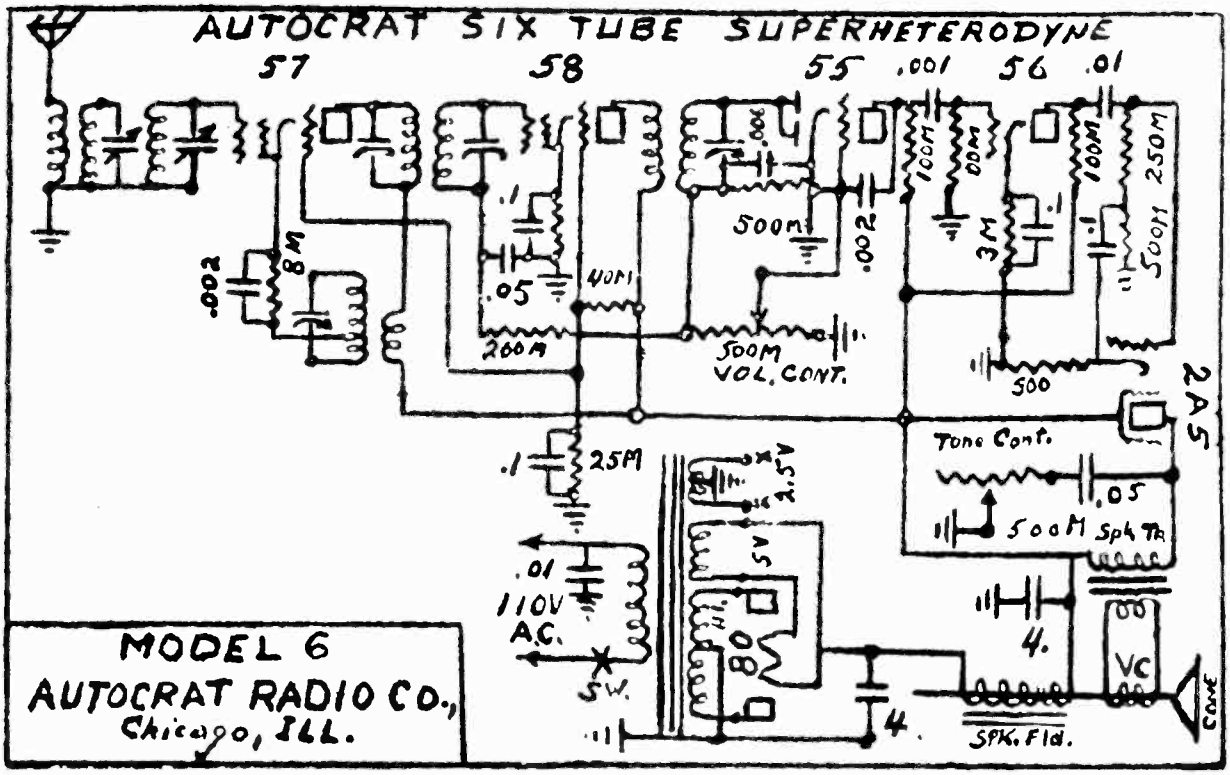
AUTOCRAT RADIO CORP.



AUTOCRAT RADIO CORP.

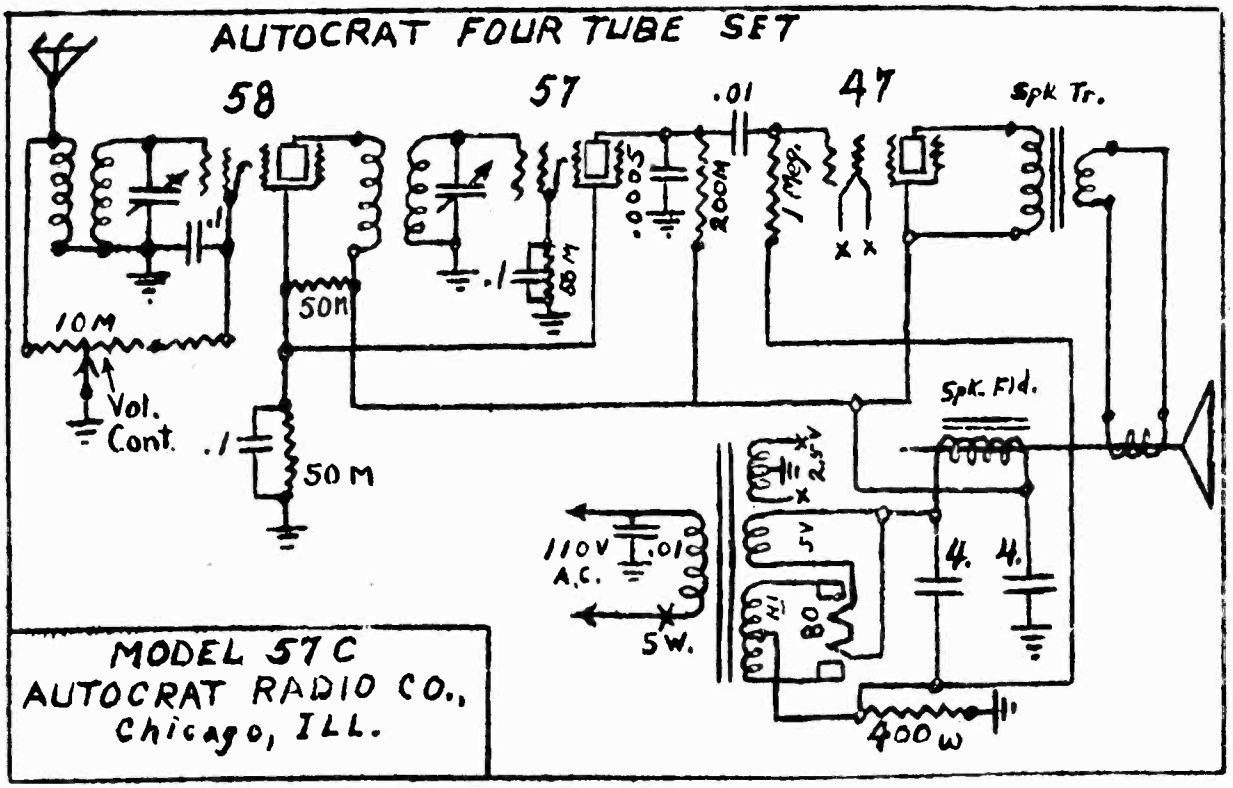
MODEL Autocrat 4 LW
MODEL Autocrat 6

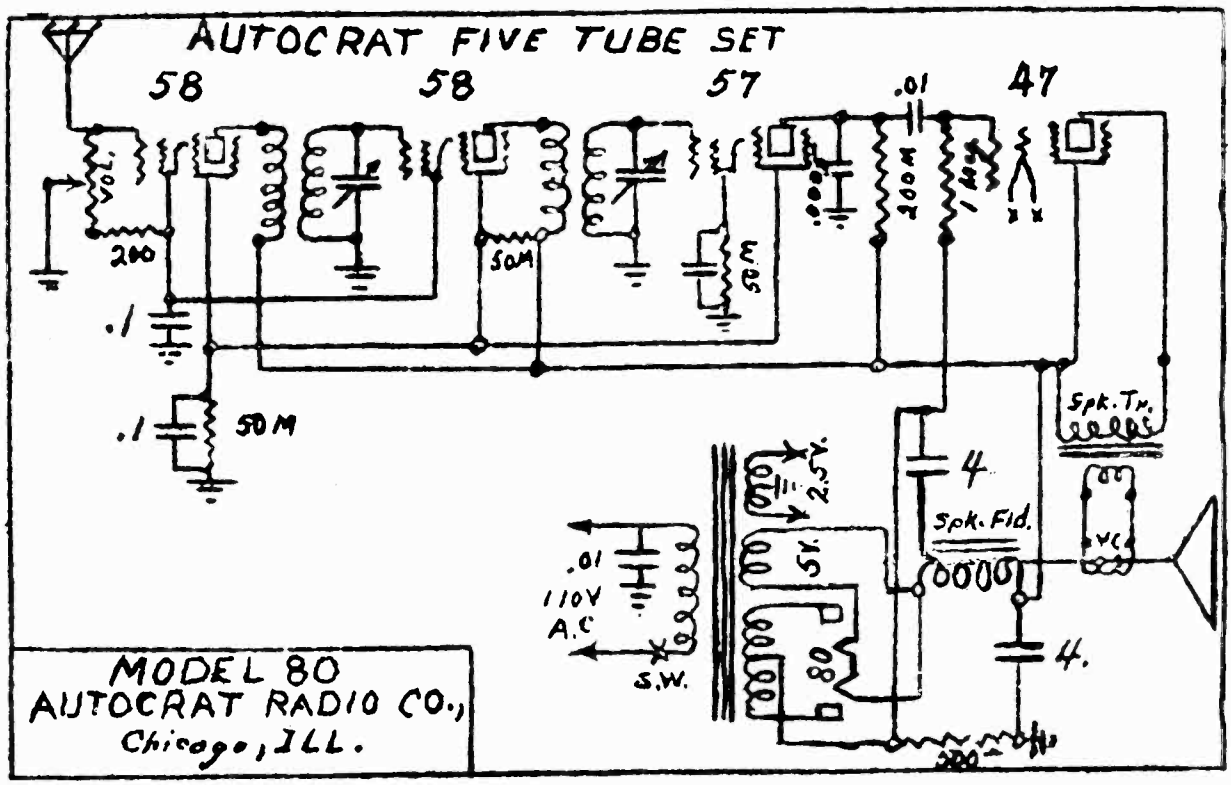




MODEL Autocrat 57 C
MODEL Autocrat 80

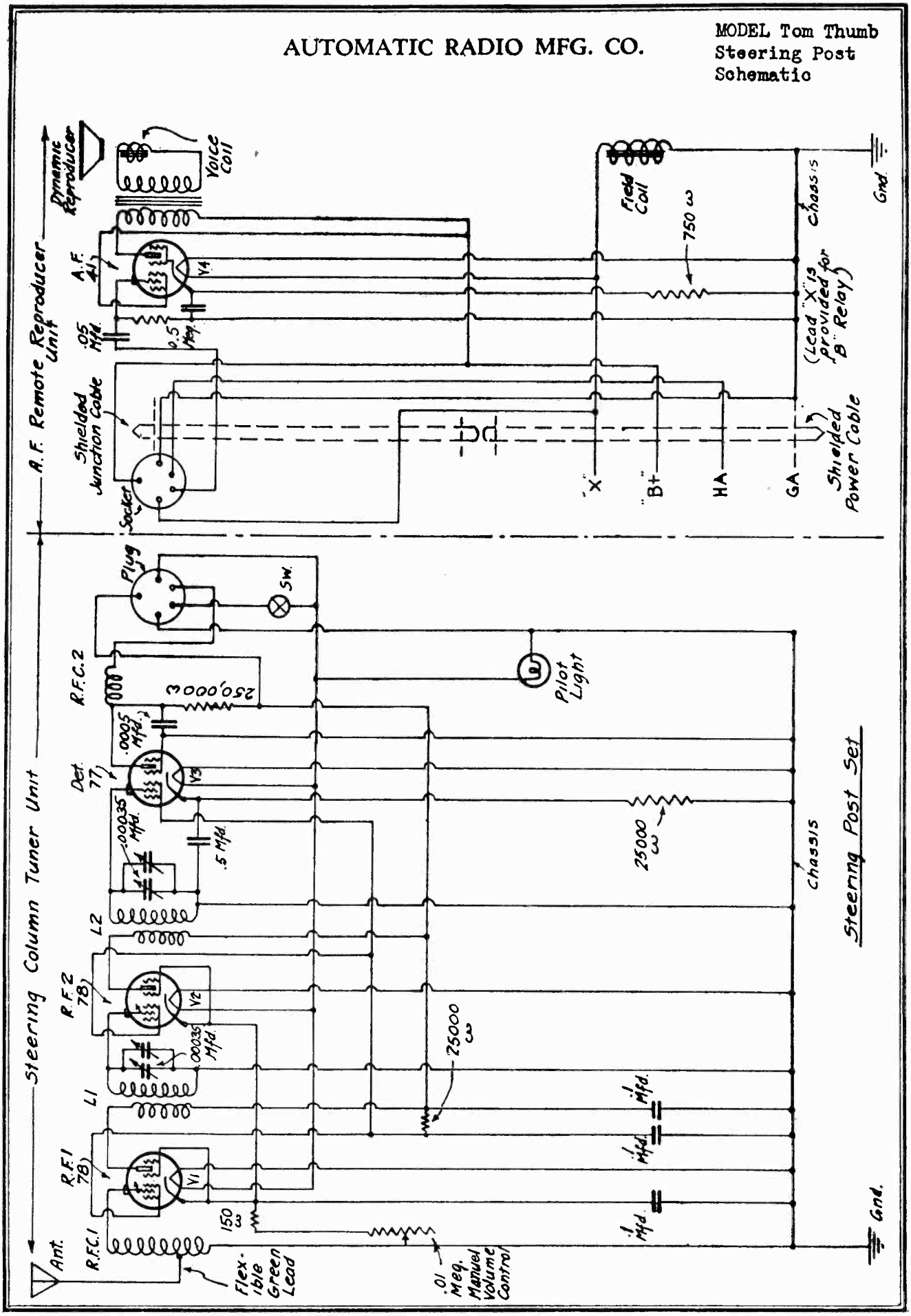
AUTOCRAT RADIO CORP.





AUTOMATIC RADIO MFG. CO.

MODEL Tom Thumb
Steering Post
Schematic



MODEL Tom Thumb
Steering Post
Notes

AUTOMATIC RADIO MFG. CO.

INSTRUCTIONS FOR INSTALLING

This TOM THUMB AUTO RADIO is designed for operation in motor cars and while due to its small size, it may be installed in any convenient part of the automobile, it is recommended for STEERING POST mounting.

Uses the latest type tubes 77's, 78's, 41's; the 41 power tube being mounted in speaker case.

Battery Model

1. Place set in proper position on steering post, either on left side, right side, or on top, and secure with the four screws furnished.

2. Mount speaker in position desired—either under the cowl—to the roof of the car—behind the front seat—or in any other convenient place.

Connect shield cable with plug on end—this coming from the speaker to the five prong socket on radio set. The other cable leading from speaker has two wires, the yellow lead is A ungrounded, the black lead coming from the shield near this yellow lead is grounded.

The brown is B plus, 135 or 180, and the pigtail lead leading from the shield near the brown wire is B minus.

Where B batteries are used, connect as follows:

1. Yellow wire to ungrounded side of storage battery, and Black lead to chassis or grounded side of storage battery, preferably the latter.

2. Connect all of the individual batteries in series, and attach the brown wire to B plus, 135 or 180, preferably 180. Connect the pigtail lead to B minus.

All-Electric Model

1. Place set in proper position on steering post, either on left side, right side, or on top, and secure with the four screws furnished.

2. Mount speaker unit in position under cowl, connect shielded cable with socket attached on end, this coming from speaker, to the five pin plug in side of radio set.

IMPORTANT! CAUTION. CHECK POLARITY OF AUTOMOBILE STORAGE BATTERY. If positive side of battery is grounded to chassis DO NOT DISTURB connections on terminal strip inside of speaker unit. In the event that negative (—) side of battery is grounded to the chassis. Remove screws holding cover on speaker unit. Pull cover slightly forward exposing terminal strip on side of speaker opposite from tube. (See Figure 3.) Reverse connection No 1 and 2, i.e. Place yellow wire on terminal No. 2 and green wire on terminal No. 1.

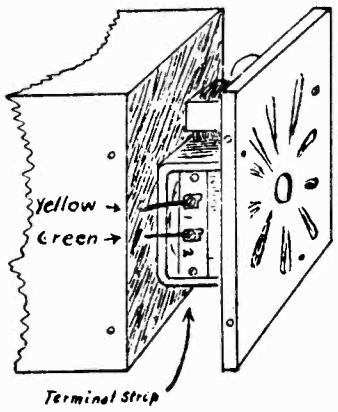
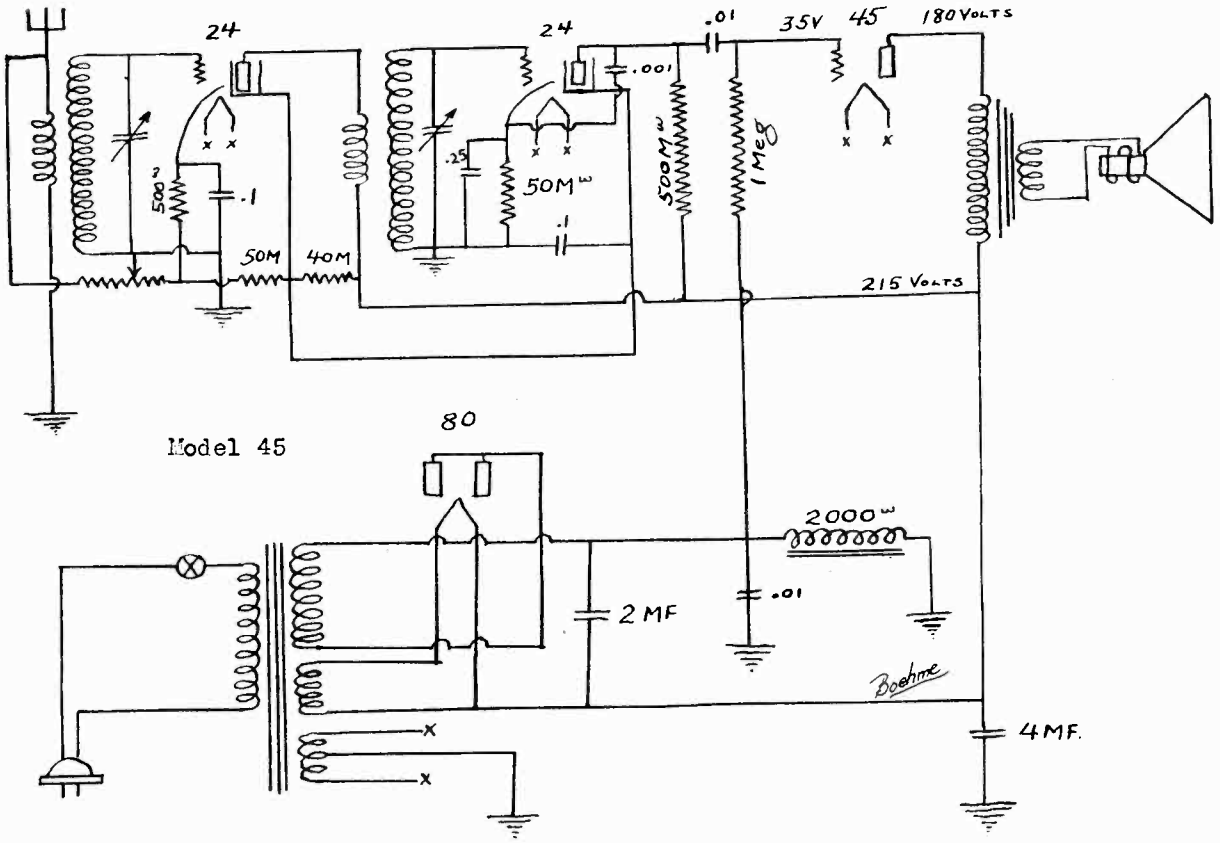


Fig. 3

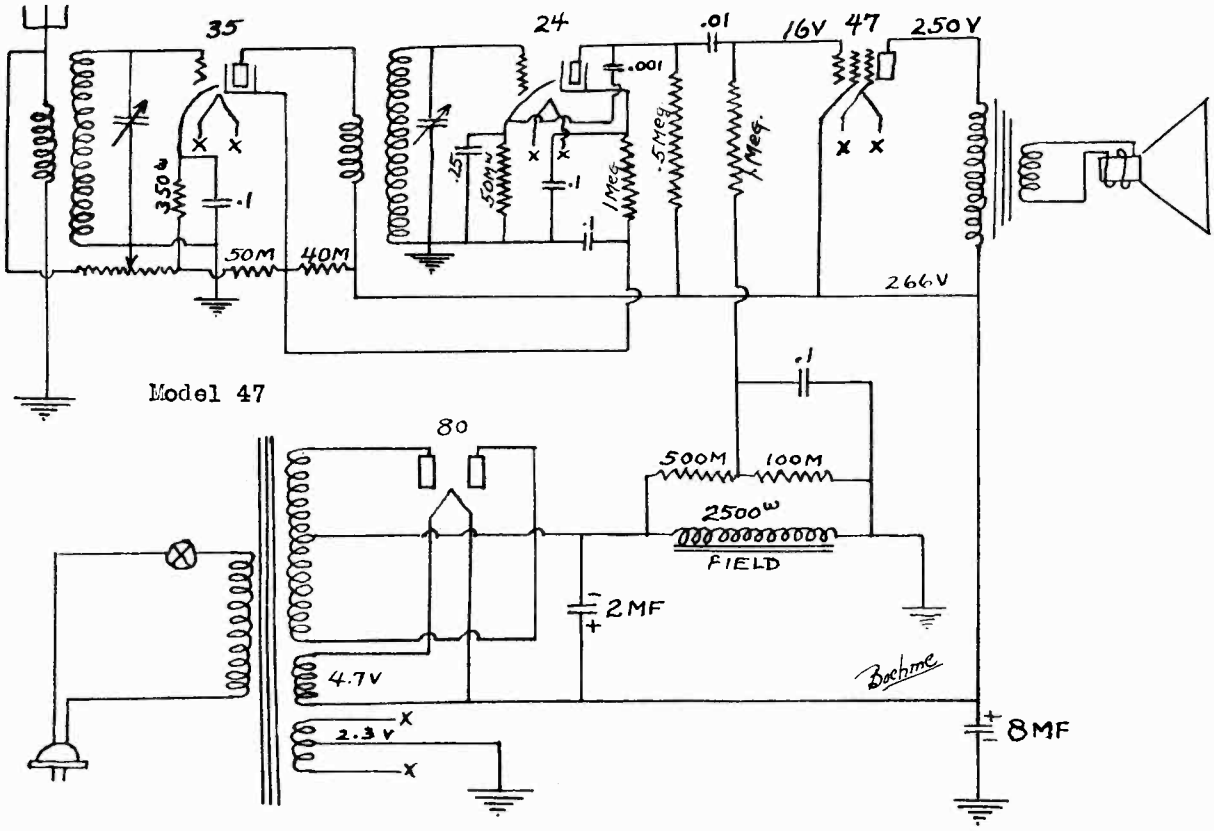
3. Connect YELLOW wire of shielded cable coming from speaker to UNGROUNDED side of storage battery and BLACK lead to GROUNDED side—making sure battery connections are clean and secure. It is also advisable to apply vaseline to battery lugs to prevent corrosion.

NATHANIEL BALDWIN & CO.

MODEL 45
MODEL 47



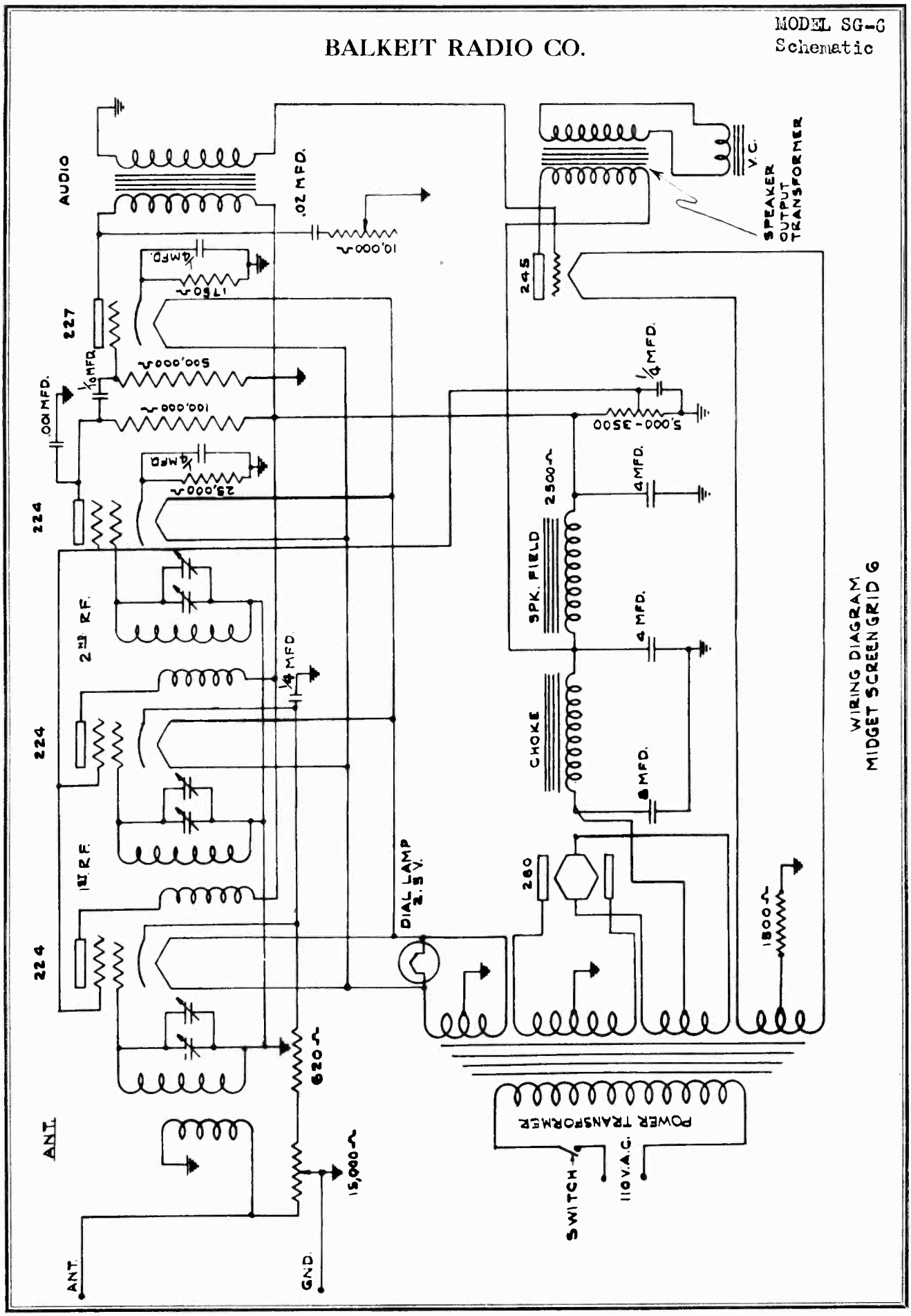
Model 45



Model 47

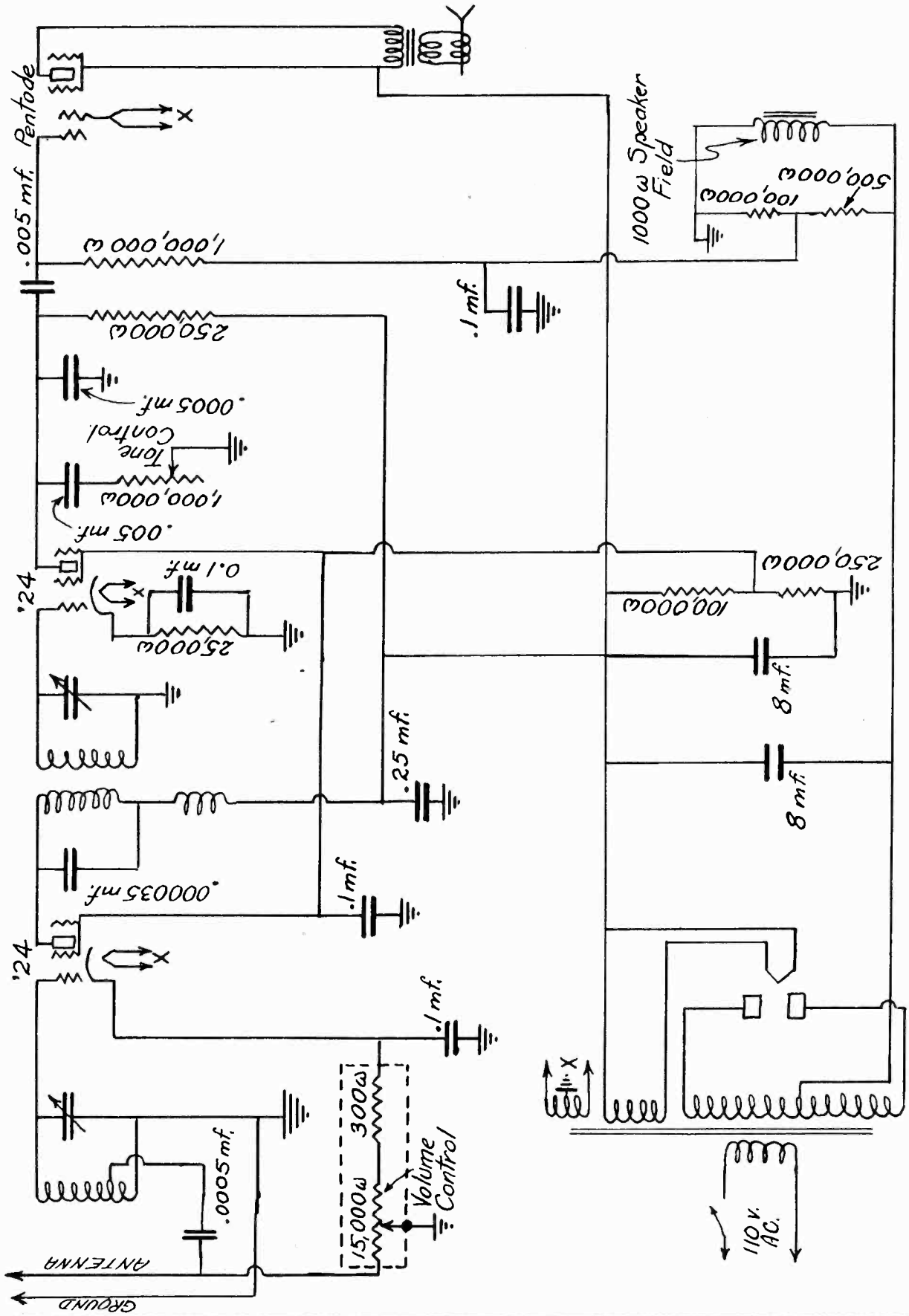
BALKEIT RADIO CO.

MODEL SG-6
Schematic



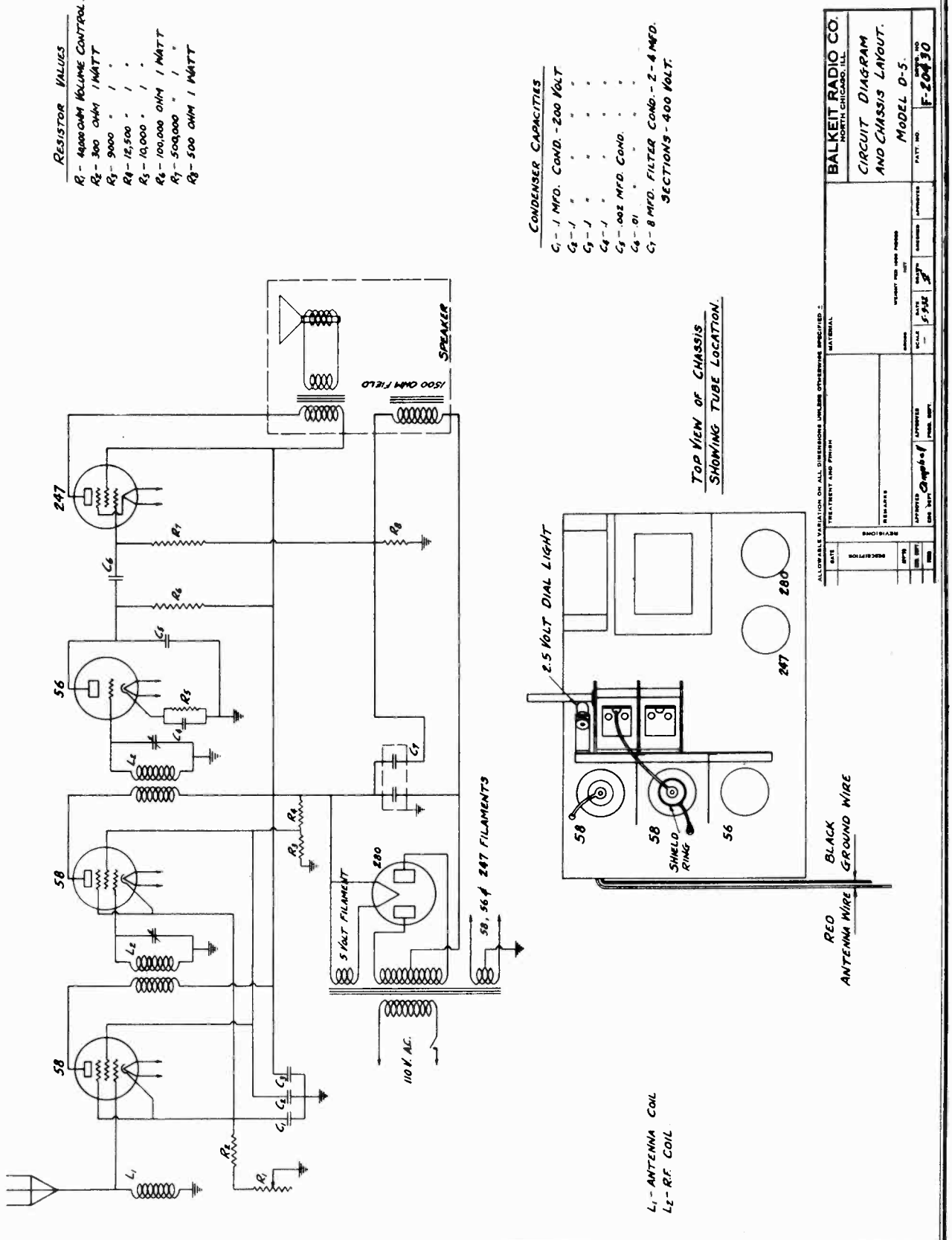
MODEL M
Schematic

BALKEIT RADIO CO.



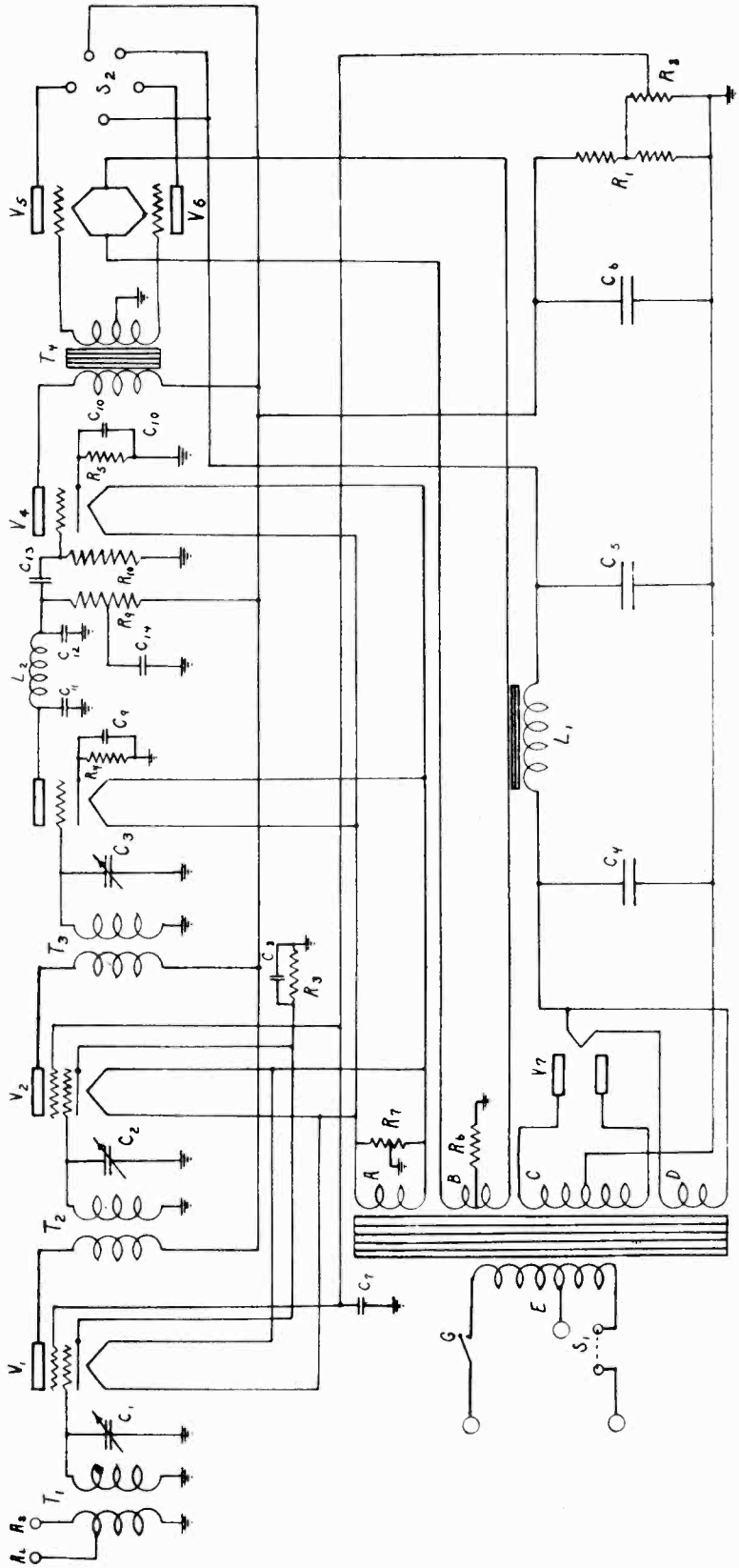
BALKEIT RADIO CO.

MODEL D-5
Schematic, Socket



MODEL Windsor 70
Schematic

BALKEIT RADIO CO.

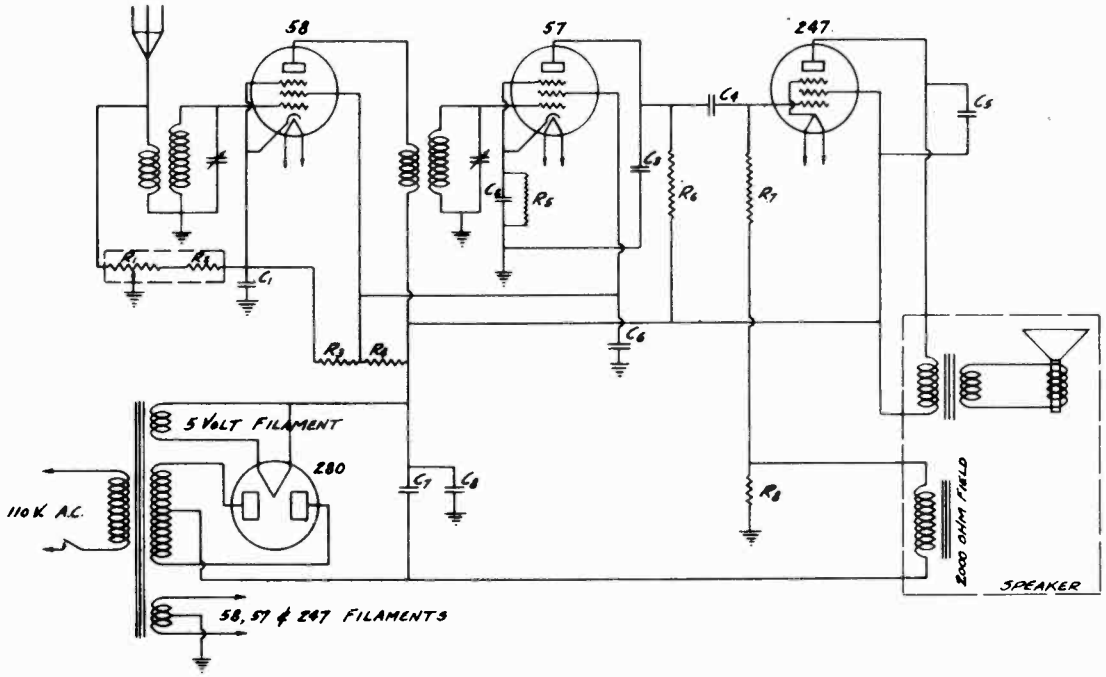


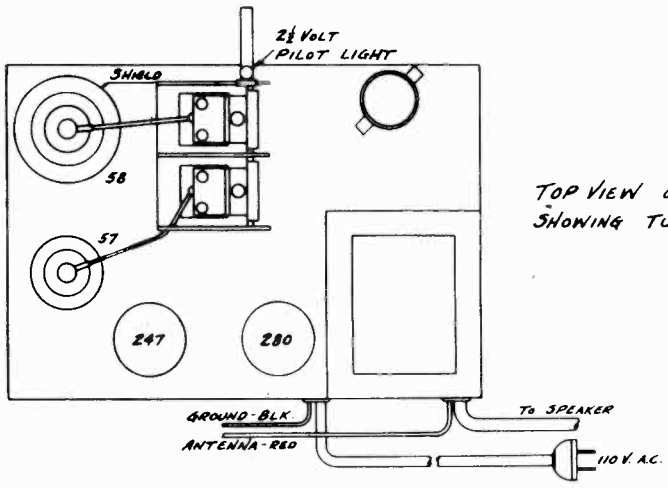
NATIONAL TRANSFORMER AND RADIO MFG. CO CHICAGO.

DRAWN BY H.E.R. DATE 7/19/33

BALKEIT RADIO CO.

MODEL 42-E, 42-G
Schematic, Socket





TOP VIEW OF CHASSIS
SHOWING TUBE LOCATION.

CONDENSER CAPACITIES

C_1	.1 MFD. CONDENSER	200 VOLT
C_2	.25 "	" "
C_3	.001 "	" "
C_4	.05 "	" "
C_5	.002 "	" "
C_6	.1 "	" "
C_7	4 "	400 VOLT
C_8	4 "	" "

RESISTOR VALUES

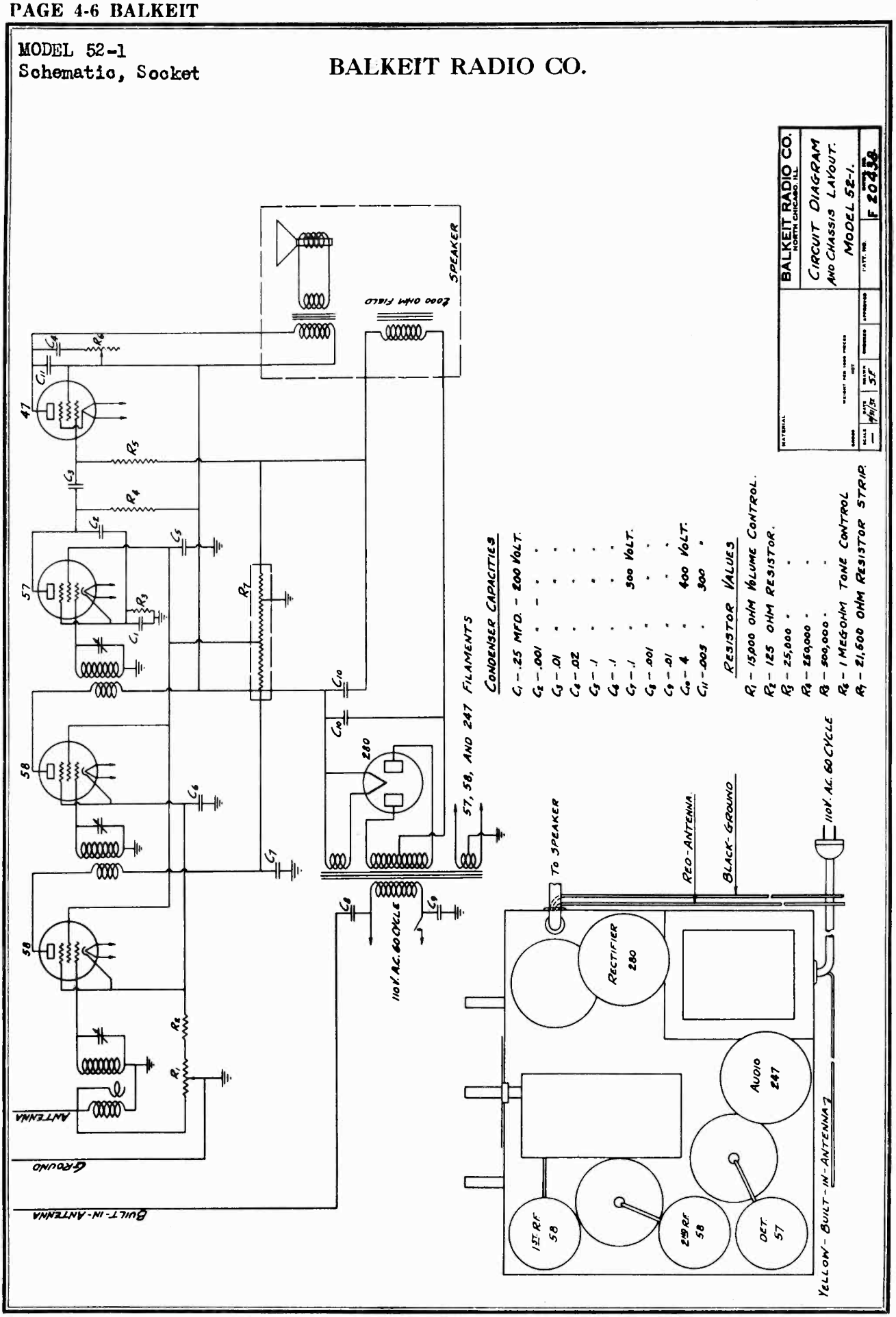
R_1	10,000 OHM	WATT
R_2	250 "	"
R_3	50,000 "	½ "
R_4	25,000 "	½ "
R_5	25,000 "	" "
R_6	500,000 "	" "
R_7	1 MEG "	" "
R_8	450 "	" "

ALLOWABLE VARIATION ON ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED :

DATE	TREATMENT AND FINISH		MATERIAL		BALKEIT RADIO CO. NORTH CHICAGO, ILL.	
DESCRIPTION	REMARKS				CIRCUIT DIAGRAM AND CHASSIS LAYOUT. MODELS 42E. 42G.	
APP'D			WEIGHT PER 1000 PIECES GROSS NET			
ENG. DEPT.	APPROVED Campbell ENG. DEPT.	APPROVED PROD. DEPT.	SCALE	DATE 8-28-32 DRAWN JF CHECKED APPROVED	PATT. NO	DRWG. NO F-20439
PROD.						

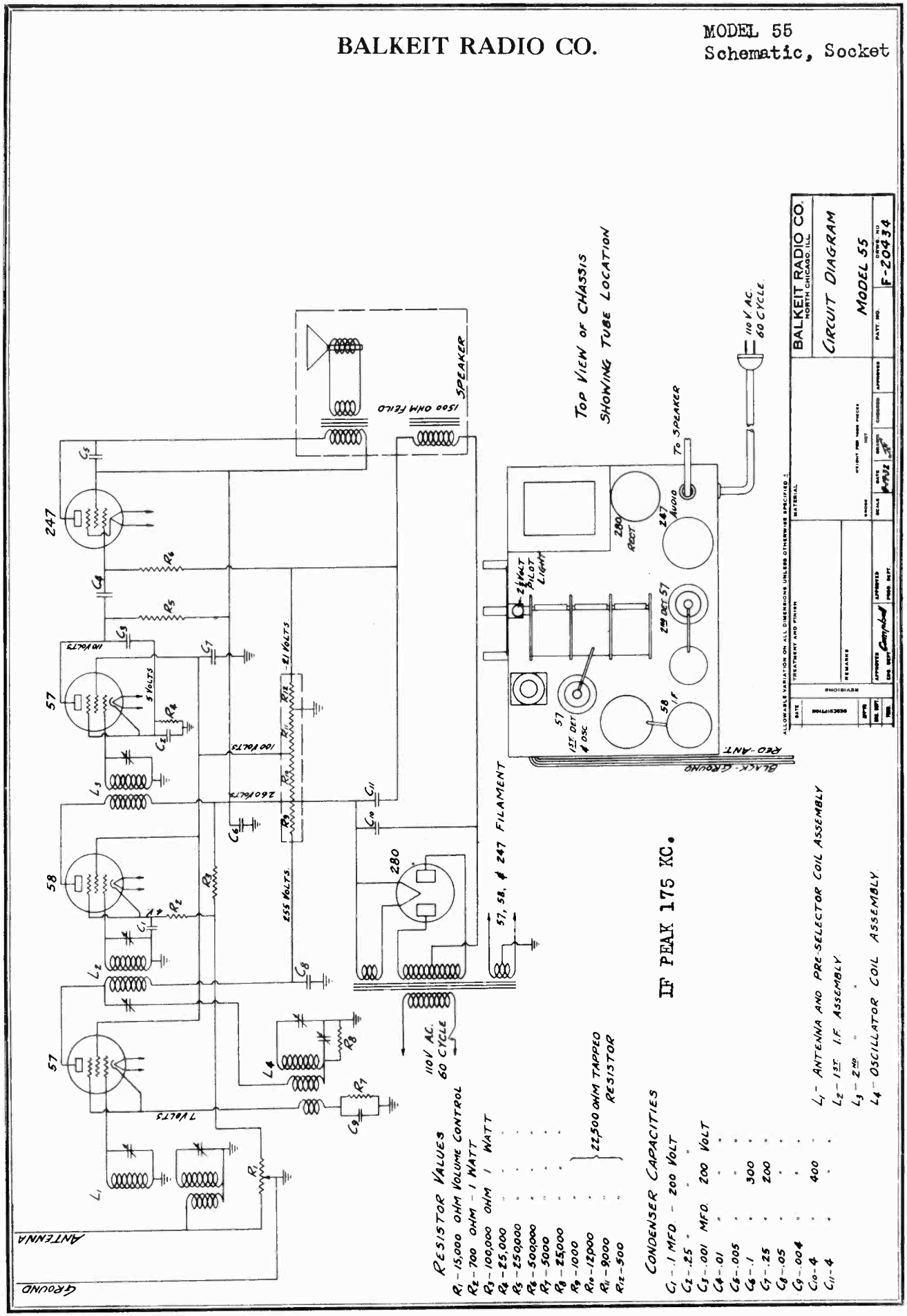
MODEL 52-1
Schematic, Socket

BALKEIT RADIO CO.



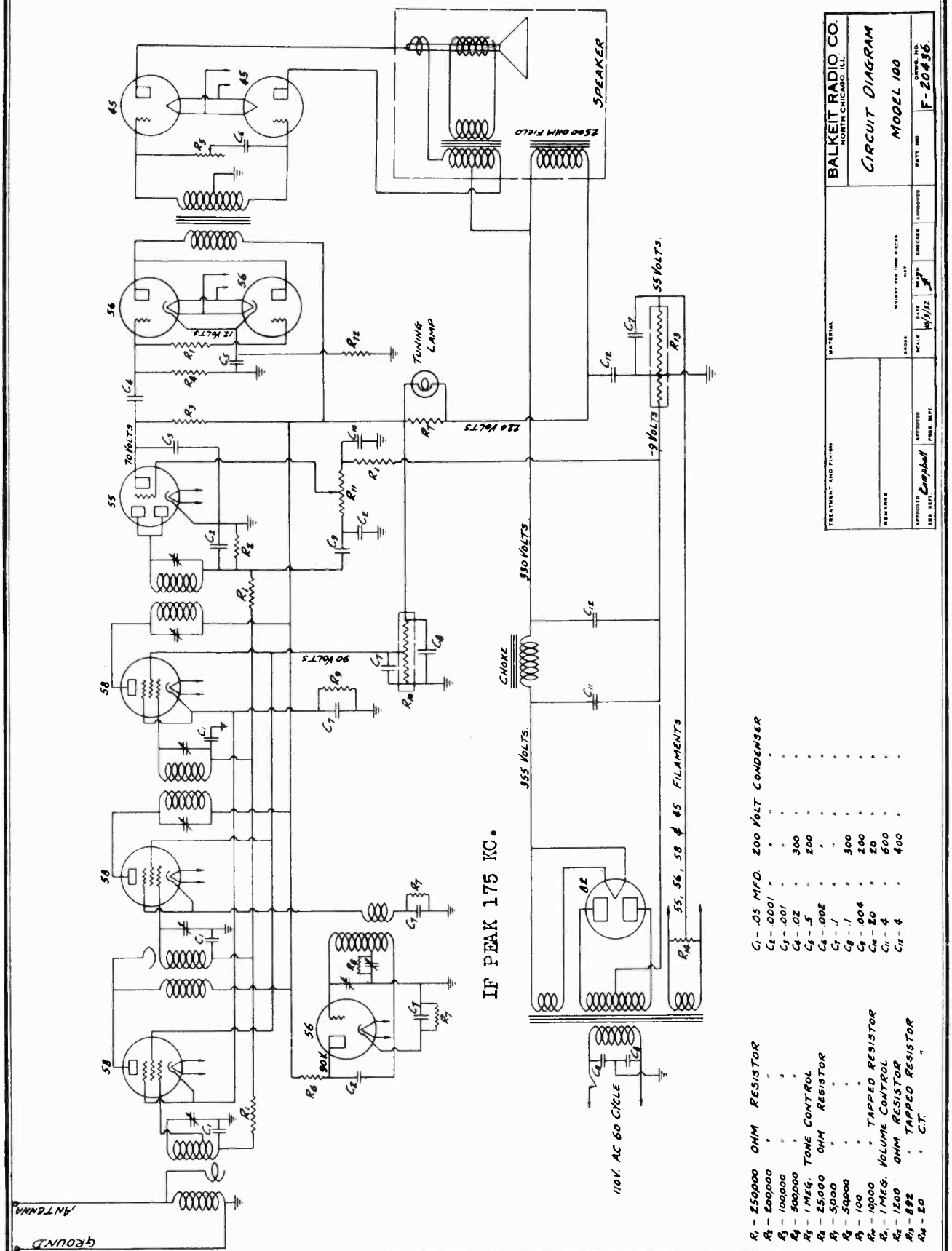
BALKEIT RADIO CO.

MODEL 55
Schematic, Socket



MODEL 100
Schematic

BALKEIT RADIO CO.

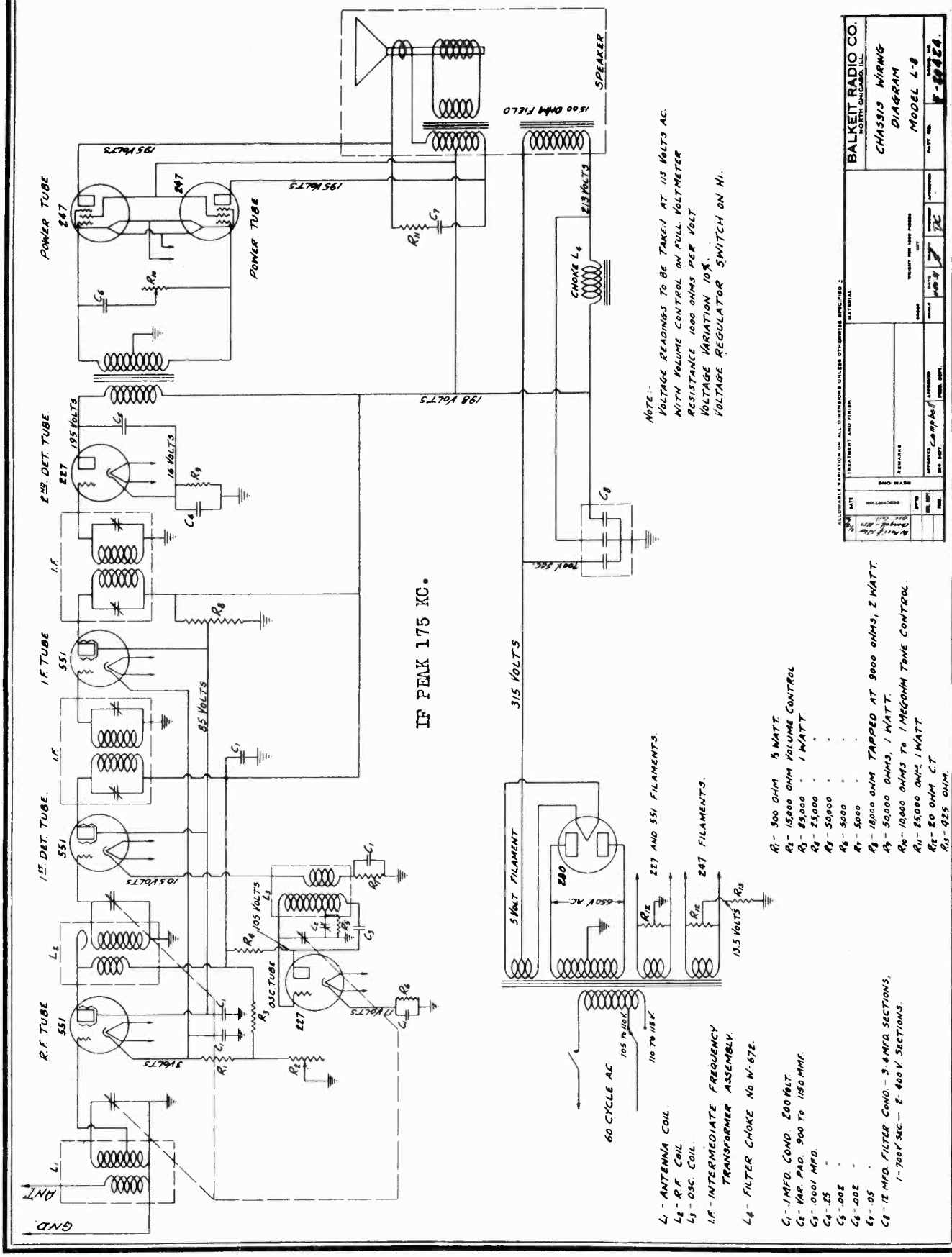


R_1 - 250000 OHM RESISTOR	C_1 - .05 MFD. 200 VOLT CONDENSER		
R_2 - 200000 " "	C_2 - .001 " " "		
R_3 - 100000 " "	C_3 - .001 " " "		
R_4 - 500000 " "	C_4 - .02 " 300 "		
R_5 - 1 MEG. TONE CONTROL	C_5 - .5 " 200 "		
R_6 - 25,000 OHM RESISTOR	C_6 - .002 " " "		
R_7 - 5000 " "	C_7 - .1 " " "		
R_8 - 50000 " "	C_8 - .1 " 300 "		
R_9 - 100 " "	C_9 - .004 " 200 "		
R_{10} - 10000 " TAPPED RESISTOR	C_{10} - 20 " 20 "		
R_{11} - 1 MEG. VOLUME CONTROL	C_{11} - 4 " 600 "		
R_{12} - 1200 OHM RESISTOR	C_{12} - 4 " 400 "		
R_{13} - 892 " TAPPED RESISTOR			
R_{14} - 20 " C.T. "			

TREATMENT AND FINISH	MATERIAL		BALKEIT RADIO CO. NORTH CHICAGO, ILL.						
REMARKS		WEIGHT PER 1000 PIECES NET	CIRCUIT DIAGRAM MODEL 100						
APPROVED ENG. DEPT. Campbell	APPROVED PROD. DEPT.	SCALE	DATE 10/3/32	DRAWN	CHECKED	APPROVED	PATT. NO	DRWG. NO. F-20436	

BALKEIT RADIO CO.

MODEL L-8
Schematic



L - ANTENNA COIL.
L2 - R.F. COIL.
L3 - OSC. COIL.
I.F. - INTERMEDIATE FREQUENCY TRANSFORMER ASSEMBLY.
L4 - FILTER CHOKE NO W-672.

C1 - .1 MFD. COND. 200 VOLT.
C2 - VAR. PAD. 900 TO 130 MMF.
C3 - .0001 MFD.
C4 - .25 "
C5 - .002 "
C6 - .002 "
C7 - .05 "
C8 - 12 MFD. FILTER COND. - 3 4 MFD. SECTIONS, 1 - 700 V. SEC. - 2 - 400 V. SECTIONS.

R1 - 300 OHM 5 WATT
R2 - 15,000 OHM VOLUME CONTROL
R3 - 25,000 " 1 WATT.
R4 - 25,000 " "
R5 - 50,000 " "
R6 - 5000 " "
R7 - 5000 " "
R8 - 18,000 OHM TAPPED AT 9000 OHMS, 2 WATT.
R9 - 50,000 OHMS, 1 WATT.
R10 - 10,000 OHMS TO 1 MEGOHM TONE CONTROL.
R11 - 25,000 OHM 1 WATT
R12 - 20 OHM C.T.
R13 - 425 OHM.

NOTE:-
VOLTAGE READINGS TO BE TAKEN AT 115 VOLTS AC.
WITH VOLUME CONTROL ON FULL. VOLTMETER
RESISTANCE 1000 OHMS PER VOLT.
VOLTAGE VARIATION 10%.
VOLTAGE REGULATOR SWITCH ON HI.

BALKEIT RADIO CO.
NORTH CHICAGO, ILL.
CHASSIS WIRING DIAGRAM
MODEL L-8
L-8EA.

SERVICE MANUAL MODEL 425

OPERATING INSTRUCTIONS

1. Carefully remove antenna wire from its compartment and stretch out full length. A properly erected well insulated outdoor antenna about 75 feet in length, including lead-in is recommended for permanent installations. A GROUND IS NOT REQUIRED.
2. After making certain that power supply is 110 volts, insert plug in receptacle.
3. Rotating VOLUME control clockwise (right) from off position turns power switch on, continued rotation increases volume. IF SET DOES NOT OPERATE IN ONE MINUTE ON DIRECT CURRENT REVERSE PLUG IN RECEPTACLE.
4. Advance volume control three-quarters turn, then select the desired station. Tune this station to the loudest point on the scale, then raise or lower volume with VOLUME control. Never regulate volume by detuning station selector, always adjust VOLUME control.

FOUR TUBES, 1—6D7, 1—6E7, 1—43, 1—25Z5.

SERVICE SUGGESTIONS

NOTE—CONNECTING CORD OF SET GETS WARM IN NORMAL OPERATION. DO NOT BECOME ALARMED.

Make sure that all tubes are pushed firmly in their proper sockets and that the clips are securely fastened to the caps on the tops of the tubes.

That the aerial is stretched out and that the connections to an outdoor antenna (if used) are good.

If necessary to change tubes or service chassis, UNDER NO CIRCUMSTANCES REMOVE BACK OR CHASSIS WITHOUT FIRST REMOVING PLUG FROM LIGHT SOCKET.

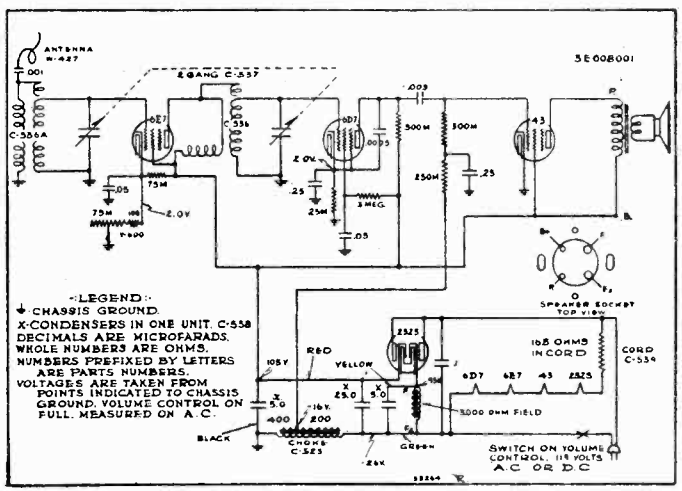
To remove chassis from cabinet, pull off knobs from front, remove back (held with screws to case). Remove four mounting screws, then chassis can be slipped out of case.

IF CABINET IS METAL CAREFULLY NOTE POSITION OF FIBRE WASHER AND THIS CARD AND REASSEMBLE IN THE SAME MANNER, INSULATING CHASSIS FROM CASE.

CIRCUIT DIAGRAM AND PARTS LIST SUPPLIED ON REQUEST—mention serial and model number and enclose stamped, self addressed envelope.

Model 425 AC-DC RECEIVER.

USE ONLY ON 105-115 VOLTS ALTERNATING (any cycles) or DIRECT CURRENT—35 WATTS.



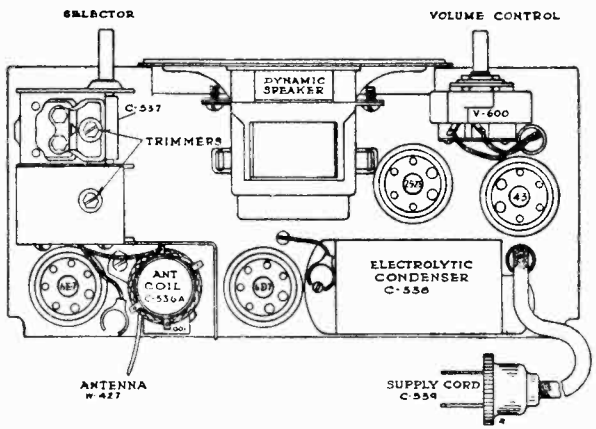
Schematic circuit diagram Model 425 AC-DC Radio Receiver.

Should it be necessary at any time to rebalance this set the procedure is as follows:

Disconnect antenna wire and attach an oscillator in series with a 50 mmfd. condenser to the antenna coil. With variable condenser at its minimum capacity position—at the extreme left of its rotation-touch trimmer condensers for maximum deflection on an output meter connected across the primary of the speaker input transformer, check trimmer adjustment at 1400 kilocycles, then align at 1200-1000-800-600-540 kilocycles, bend slotted plates of variable condenser if necessary.

PARTS LIST

Part No.	Description	List Price
C 145	.1—400 Volt Condenser	$0.25 ea.
C 154	.001 Mica Condenser	.25 ea.
C 155	.0005 Mica Condenser	.20 ea.
C 523	600 Ohm Choke Coil	1.25 ea.
C 531	Dual .05 Condenser	.30 ea.
C 536	R. F. Coil	.50 ea.
C 536A	Antenna Coil	.50 ea.
C 537	2 Gang Condensers	2.50 ea.
C 538	5-25-5 Electrolytic Condenser	2.00 ea.
C 539	Special Cord and Plug	1.25 ea.
C 540	Dual .25-200 V. Condenser	.40 ea.
C 541	.003-400 V. Condenser	.25 ea.
K 214	Knobs	.40 ea.
V 600	Volume Control	1.35 ea.
W427	Antenna Wire	.30 ea.
	All carbon resistors	.20 ea.
	All sockets	.20 ea.
	Dynamic speakers	5.00 ea.
	Cabinets	2.50 ea.
	Carrying cases	2.00 ea.
	Adapters for 220 volt operation	2.25 ea.



BELMONT RADIO CORPORATION

1257 Fullerton Avenue **CHICAGO, ILLINOIS**

BELMONT RADIO CORP. MODEL 425 Schematic, Socket

SERVICE MANUAL MODEL 530

OPERATING INSTRUCTIONS

1. Carefully remove antenna wire from its compartment. A properly erected well insulated outdoor antenna about 75 feet in length, including lead-in is recommended. A GROUND IS NOT REQUIRED.
2. After making certain that power supply is 110 volts, insert plug in receptacle.
3. Rotating VOLUME control clockwise (right) from off position turns power switch on, continued rotation increases volume. IF SET DOES NOT OPERATE IN ONE MINUTE ON DIRECT CURRENT REVERSE PLUG IN RECEPTACLE.
4. Advance volume control three-quarters turn, then select the desired station. Tune this station to the loudest point on the scale, then raise or lower volume with VOLUME control. Never regulate volume by detuning station selector, always adjust VOLUME control.

FIVE TUBES, 1—6A7, 1—6D6, 1—75, 1—43, 1—2525.

SERVICE SUGGESTIONS

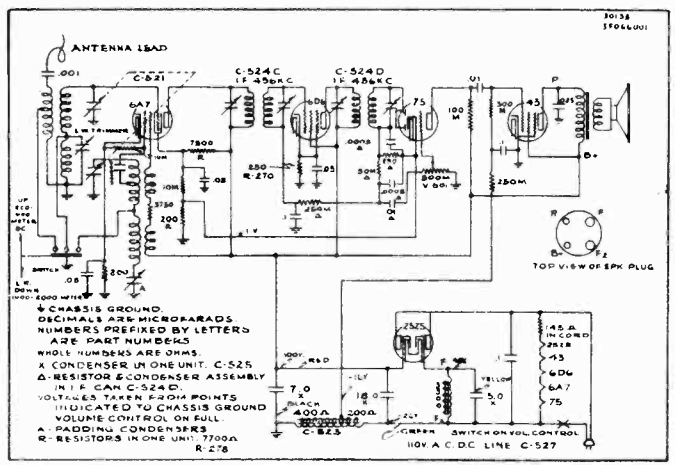
NOTE—CONNECTING CORD OF SET GETS WARM IN NORMAL OPERATION. DO NOT BECOME ALARMED.

Make sure that all tubes are pushed firmly in their proper sockets and that the clips are securely fastened to the caps on the tops of the tubes.

That the aerial is stretched out and that the connections to an outdoor antenna (if used) are good.

If necessary to change tubes or service chassis, UNDER NO CIRCUMSTANCES REMOVE BACK OR CHASSIS WITHOUT FIRST REMOVING PLUG FROM LIGHT SOCKET.

To remove chassis from cabinet, pull off knobs from front, remove back (held with screws to case). Remove four mounting screws, then chassis can be slipped out of case.



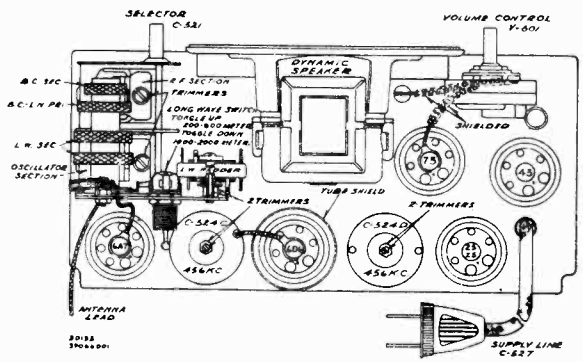
Schematic Circuit Diagram and Aligning Instructions Model 530 AC-DC Superheterodyne
200-600 Meters: 1000-2000 Meters

Should it be necessary, at any time, to rebalance this set the procedure is as follows: Attach a 456 kilocycle oscillator to the grid of the 6A7 tube in back of the variable condenser and adjust the trimming condensers of the I. F. transformers to maximum deflection on an output meter connected across the primary of the speaker input transformer. While adjusting these trimmers, the variable condenser should be at the maximum capacity position—at the extreme right of its rotation.

With switch lever up in 200-600 meter position, disconnect the antenna wire and connect an oscillator in series with a 250 mfd. condenser to the antenna coil, rotate the condenser plates to the minimum capacity position, extreme left turn, and adjust trimmer condenser of the oscillator and rear section of the variable to resonance with the oscillator set at 200 meters, adjust the front section to resonance at 215 meters, align at 250—300—400—500 meters and bend slotted plates of variable condenser if necessary. To adjust long wave, 1000-2000 meters, with switch lever down, set variable at maximum capacity, extreme right turn, and tune generator to maximum output, then peak long wave padder (hexagon nut of L. W. Padder), at the same time tuning oscillator until maximum output is attained. Attach oscillator leads to grid of 6A7 ground, set variable condenser at minimum capacity, extreme left turn, and adjust oscillator to resonance with set. Remove oscillator lead from grid of 6A7 and attach to antenna lead, then adjust long wave R.F. trimmer to maximum output (set screw adjustment of L. W. Padder). Do not disturb either oscillator or variable condenser while making this adjustment.

PARTS LIST

Part No.	Description	List Price
C 145	.1—300 Volt Condenser	$0.25 ea.
C 155	.0005 Mica Condenser	.20 ea.
C 521	Two Gang Condenser	2.50 ea.
C 522	.01—400 Volt Condenser	.25 ea.
C 523	600 Ohm Choke Coil	1.25 ea.
C 538	5-25-5 Electrolytic Condenser	2.00 ea.
C 548	Padding Condenser	.75 ea.
C 525B	5-25-10 Electrolytic Condenser	2.00 ea.
C 524C	I. F. Transformer	1.25 ea.
C 524D	I. F. Transformer	1.25 ea.
C 524E	Combination Antenna Coil	1.25 ea.
C 524F	Combination Oscillator Coil	1.10 ea.
C 527	Special Cord and Plug	1.25 ea.
C 531	Dual .05 Condenser	.30 ea.
C 534	Dual .1-.025 Condenser	.30 ea.
K 214	Knobs	.40 ea.
R 270	250 Ohm—Wire Wound Resistor	.25 ea.
R 278	7700 Ohm Resistor	.50 ea.
S 336	Wave Change Switch	.60 ea.
V 601	Volume Control	1.35 ea.
	All carbon resistors	.20 ea.
	All sockets	.20 ea.
	Dynamic speakers	5.00 ea.
	Cabinets	2.50 ea.
	Carrying cases	2.00 ea.
	Adapters for 220 volt operation	2.25 ea.



BELMONT RADIO CORPORATION

1257 Fullerton Avenue **CHICAGO, ILLINOIS**

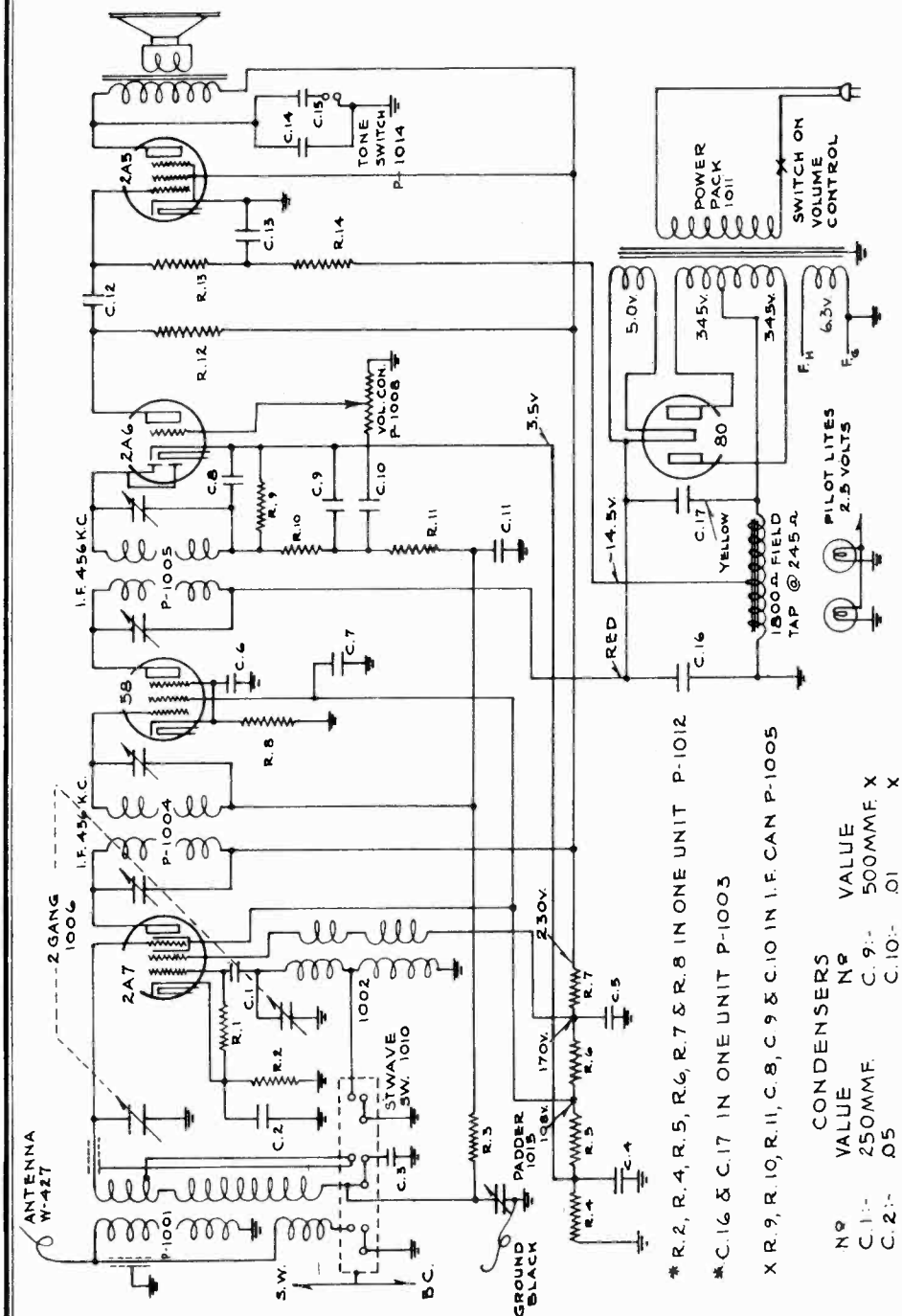
BELMONT RADIO CORP.

MODEL 550
Schematic

SERVICE MANUAL FIVE TUBE TWO BAND SUPERHETERODYNE

WITH A. V. C.

105-115 volts alternating current 50-60 cycles - 60 watts.
GREEN (Broadcast band) 530 - 1550 Kilocycles
RED (Short wave band) 1550 - 14,000 Kilocycles



IF PEAK 456 KC

LEGEND

RESISTORS

No	VALUE	No	VALUE
R.1 -	50M	R.8 -	300 *
R.2 -	500 *	R.9 -	250M X
R.3 -	250M	R.10 -	50M X
R.4 -	250 *	R.11 -	250M X
R.5 -	20M *	R.12 -	250M
R.6 -	6M *	R.13 -	300M
R.7 -	4M *	R.14 -	250M

CONDENSERS

No	VALUE	No	VALUE
C.1 -	250MMF.	C.9 -	500MMF. X
C.2 -	.05	C.10 -	.01 X
C.3 -	.05	C.11 -	.1
C.4 -	.05	C.12 -	.01
C.5 -	.05	C.13 -	.05
C.6 -	.05	C.14 -	.01
C.7 -	.1	C.15 -	.02
C.8 -	500MMF. X	C.16 -	8MF. *
		C.17 -	8MF. *

NUMBERS PREFIXED BY LETTER "P" ARE PART NUMBERS.
VOLTAGES TAKEN FROM POINTS INDICATED TO CHASSIS GROUND. VOLUME CONTROL ON FULL.
VOLTAGES WITH 119V. A.C. LINE

* R.2, R.4, R.5, R.6, R.7 & R.8 IN ONE UNIT P-1012

* C.16 & C.17 IN ONE UNIT P-1003

X R.9, R.10, R.11, C.8, C.9 & C.10 IN I.F. CAN P-1005

33248

MODEL 550
Notes, Sooket
Parts List

BELMONT RADIO CORP.

SERVICE NOTES

Should it be at any time necessary to rebalance this set, the correct procedure is as follows:

To peak I.F. transformers connect oscillator (set at 456 KC) to grid of 2A7 tube and (Black) ground wire. With variable condenser set at minimum capacity, (extreme left of its rotation) adjust four trimmers (one nut and one screw on each transformer trimmer) to resonance (maximum deflection on an output meter connected across the primary of the speaker input transformer).

To align Broadcast band, set wave changing switch to Green (right turn) and with variable condenser at minimum capacity disconnect antenna wire and connect 1550 KC oscillator to antenna coil in series with a 75 MMFD condenser. Adjust oscillator (front) section trimmer to resonance. Set oscillator to 1400 KC, rotate variable condenser until signal is tuned in, then adjust R.F. (rear) section trimmer to resonance. Check output at 1200, 1000, 800, and 600 Kilocycles if necessary bend plates (of rear R.F. section of variable only).

To align Short wave band, set wave changing switch to RED (left turn) and with input oscillator connected as above and set at 1720 KC, tune in signal, adjust padding condenser on rear of chassis to resonance. Check for output at 1550 KC and at harmonies of 1000 KC (2000 KC), of 1200 KC (2400 KC), of 1400 KC (2800 KC), and of 1720 KC (3440 KC). DO NOT BEND PLATES.

For failure to operate over both bands check 2A7 tube and connections to and contacts of wave changing switch.

OPERATING INSTRUCTIONS—READ CAREFULLY

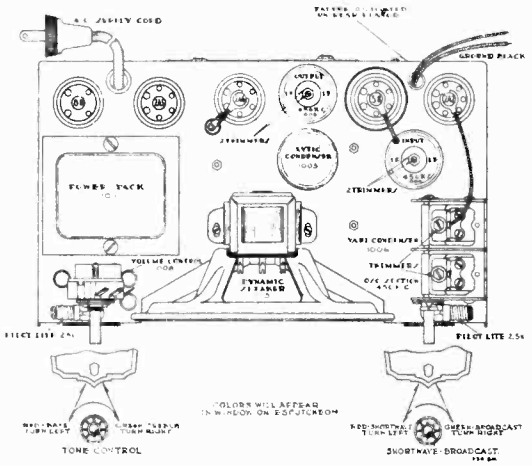
1. Carefully remove antenna wire from its compartment. Stretch out to its full length. A GROUND WHILE NOT REQUIRED IS RECOMMENDED(Black Wire). Outdoor antenna if used should be approximately 60 feet long including lead in.
2. After making certain that power supply is 105-115 volts, 60 cycles, alternating current, insert plug in receptacle.
3. Rotating VOLUME control clockwise (right) from off position turns power switch on, continued rotation increases volume.
4. Advance volume control three-quarter turn, then select the desired station. Tune this station to the loudest point on the scale, then raise or lower volume with VOLUME control. Never regulate volume by detuning station selector, always adjust VOLUME control.
4. Tone modifier below volume control. Green color in window is treble, red is bass.
5. Station selector is functioning on broadcast band (525-1550 k. c.) of scale when color in window is green. Short-wave reception (1500-4000 k. c.) is obtained when knob below station selector is rotated so that color is red.

FIVE TUBES: 1-2A7, 1-58, 1-2A6, 1-2A5, 1-80.

MODEL 550

SUPERHETERODYNE—SHORT WAVE AND BROADCAST RECEIVER, 1500 to 4000 Kilocycles and 525 to 1550 Kilocycles

CIRCUIT DIAGRAM AND PARTS LIST SUPPLIED ON REQUEST—mention serial and model number and enclose stamped, self addressed envelope.
USE ONLY ON 105-115 VOLTS ALTERNATING CURRENT—60 cycles, 50 watts.



INTERMEDIATE FREQUENCY 456 K. C.

SERVICE SUGGESTIONS:

Make certain of the following: That all tubes are pushed firmly in their proper sockets and that the clips are securely fastened to the caps. That the aerial connection is good and not short-circuited to ground. That the ground is secure and direct. (Pilot lights illuminate when set is turned on.)

PILOT LIGHTS: The pilot lights used are 2.5 volt Mazda. No T 41

To replace, remove chassis from cabinet, pull off knobs from front, remove back (held with screws to case). Remove four mounting screws, then chassis can be slipped out of case.

STANDARD WARRANTY

This receiver and tubes were carefully tested and inspected: it was packed in an approved container and left our factory in perfect condition. Should it arrive in a damaged condition, file claim with carrier at once.

We warrant each new radio receiver manufactured by us to be free from defects in material or workmanship under normal use, our obligation under this warranty being limited to making good at our factory any part or parts thereof which shall within ninety days from date of shipment be returned to our factory, carefully packed and transportation charges prepaid.

This warranty will not apply if this card is not returned with set, or if serial number has been effaced or tampered with, or if in our judgment set has been misused, abused or connected otherwise than in accordance with these instructions.

BELMONT RADIO CORPORATION
1257 Fullerton Avenue CHICAGO, ILLINOIS

Part No.	Description	List Price
1001	Antenna Coil	$ 2.50 ea.
1002	Oscillator Coil & Bracket	1.20 ea.
1002	8-8 MFD electrolytic filter condenser.	2.50 ea.
1004	Input I.F. Transformer and can	1.50 ea.
1005	Output I.F. Transformer with can and including parts as indicated on schematic circuit diagram.	2.50 ea.
1006	Two gang gear drive variable condenser.	2.75 ea.
1008	500M Ohm volume control with switch	1.35 ea.
1010	Wave changing switch	.75 ea.
1011	105-115 volt 50-60 cycle power transformer	3.50 ea.
	All carbon resistors	.20 ea.

All resistors are RMA color coded - specify value and/or resistor number (per schematic diagram) and model number.

Part No.	Description	List Price
1012	31,050 Ohm metal clad resistor.	1.00 ea.
1014	Tone control switch	.30 ea.
1015	400-300M-MFD Padding condenser	.60 ea.
1017	Special light socket	.10 ea.
1019	Rubber line cord & plug	.50 ea.
1039	Celluloid selector scale	.15 ea.
1040	Celluloid volume scale	.15 ea.
1041	Escutcheon for parts 1039 and 1040	.35 ea.
1044	Color indicating strip assembly.	.25 ea.
5031	Small knobs for wave changing switch & tone control.	.15 ea.
5032	2.5 volt pilot lights	.20 ea.
K214	Knob (selector and volume controls)	.15 ea.
	All molded mica condensers	.25 ea.
	All single section tubular paper bypass condensers.	.25 ea.
	All dual section tubular paper bypass condensers.	.50 ea.

SERVICE MANUAL 625

OPERATING INSTRUCTIONS

1. Carefully remove antenna wire from its compartment. A properly erected well insulated outdoor antenna about 75 feet in length, including lead-in is recommended. A GROUND IS NOT REQUIRED.
2. After making certain that power supply is 110 volts, insert plug in receptacle.
3. Rotating VOLUME control clockwise (right) from off position turns power switch on, continued rotation increases volume. IF SET DOES NOT OPERATE IN ONE MINUTE ON DIRECT CURRENT REVERSE PLUG IN RECEPTACLE.
4. Advance volume control three-quarters turn, then select the desired station. Tune this station to the loudest point on the scale, then raise or lower volume with VOLUME control. Never regulate volume by detuning station selector, always adjust VOLUME control.

SIX TUBES, 1—6A7, 2—78, 1—75, 1—43, 1—2525.

SERVICE SUGGESTIONS

NOTE—CONNECTING CORD OF SET GETS WARM IN NORMAL OPERATION. DO NOT BECOME ALARMED.

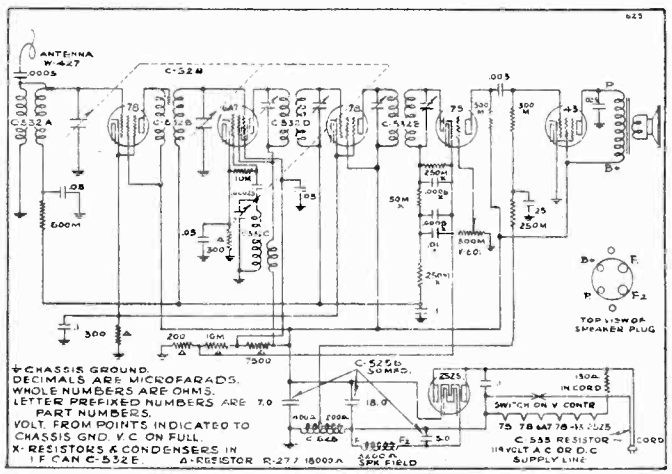
Make sure that all tubes are pushed firmly in their proper sockets and that the clips are securely fastened to the caps on the tops of the tubes.

That the aerial is stretched out and that the connections to an outdoor antenna (if used) are good.

If necessary to change tubes or service chassis, UNDER NO CIRCUMSTANCES REMOVE BACK OR CHASSIS WITHOUT FIRST REMOVING PLUG FROM LIGHT SOCKET.

To remove chassis from cabinet, pull off knobs from front, remove back (held with screws to case). Remove four mounting screws, then chassis can be slipped out of case.

USE ONLY ON 105-115 VOLTS ALTERNATING (any cycles) or DIRECT CURRENT—40 WATTS.

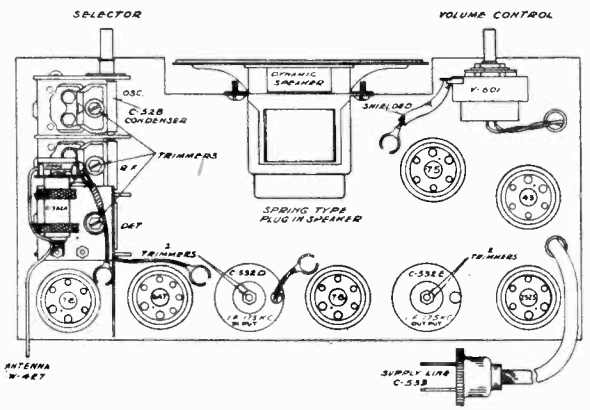


Schematic circuit diagram AC-DC Radio Receiver.

SERVICE NOTES: Should it be necessary at any time to rebalance this set, the procedure is as follows: Disconnect antenna wire and attach an oscillator in series with a 50 mmfd. condenser to the antenna coil. With the variable condenser at its minimum capacity position, at the extreme right of its rotation, and oscillator set at 1720 kilocycles, adjust condenser trimmer of oscillator section (shaft end section) for maximum detection on an output meter connected across the primary of the speaker input transformer, then adjust antenna and R.F. trimmers at 1400 kilocycles, align at 1200-1000-800-600-530 kilocycles, bend slotted plates of variable condenser if necessary. To align intermediate frequency transformers, proceed as follows: with variable condenser at its maximum capacity position, connect a 175 kilocycle oscillator in series with a .1 mfd. condenser to grid cap of 6A7 tube, peak four I.F. trimmers at 175 kilocycles, an output meter should be used to indicate resonance. NOTE: Both transformers are double tuned, one trimmer is adjusted with a screw driver, the other with a hexagon wrench, see figure 1.

PARTS LIST

Part No.	Description	List Price
C 145	.1—400 Volt Condenser	$0.25 ea.
C 152	.0025 Mica Condenser	.20 ea.
C 155	.0005 Mica Condenser	.20 ea.
C 522	.01—400 Volt Condenser	.25 ea.
C 523	600 Ohm Choke Coil	1.25 ea.
C 525	5-25-10 Electrolytic Condenser	2.00 ea.
C 525B	5-25-10 Electrolytic Condenser	2.00 ea.
C 525C	5-25 Mfd. Electrolytic Condenser	1.50 ea.
C 525D	5 Mfd. Electrolytic Condenser	.50 ea.
C 528	3 Gang Geared Condonser	3.75 ea.
C 531	Dual .05 Condenser	.30 ea.
C 532A	Antenna Coil	.80 ea.
C 532B	Oscillator Coil	.70 ea.
C 532C	I. F. Transformer	1.25 ea.
C 532D	Output I. F. Transformer with Parts	2.50 ea.
C 533	Special Cord and Plug 130 ohms	1.25 ea.
C 535	Dual .1-200 Volt Condenser	.35 ea.
C 536	Dual .025-.05 Condenser	.35 ea.
C 544	.25-200 Volt Condenser	.25 ea.
C 552	.003-400 V. Condenser	.25 ea.
R 277	18,300 ohm resistor	.60 ea.
K 214	Knobs	.40 ea.
V 601	Volume Control	1.35 ea.
W427	Antenna Wire	.30 ea.
	All carbon resistors	.20 ea.
	All sockets	.20 ea.
	Dynamic speakers	5.00 ea.
	Cabinets	3.00 ea.
	Adapters for 220 volt operation	2.25 ea.



Belmont Radio Corporation : : : 1257 Fullerton Avenue, Chicago, Ill.

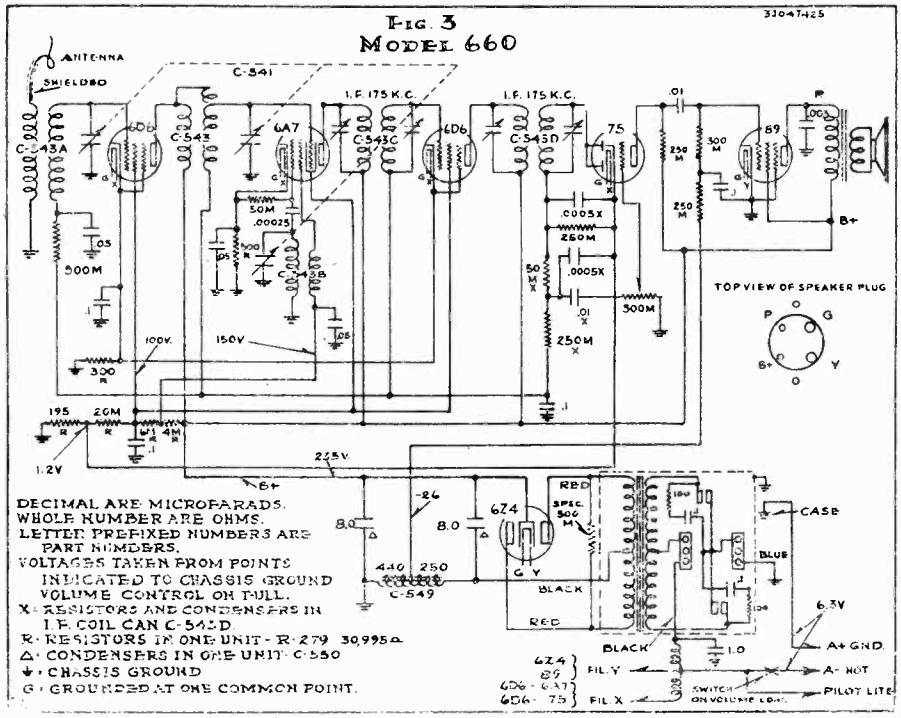
BELMONT RADIO CORP.

MODEL 625
Schematic, Socket
Parts List

BELMONT PAGE 4-5

MODEL 660
Schematic, Socket
Parts List

BELMONT RADIO CORP.



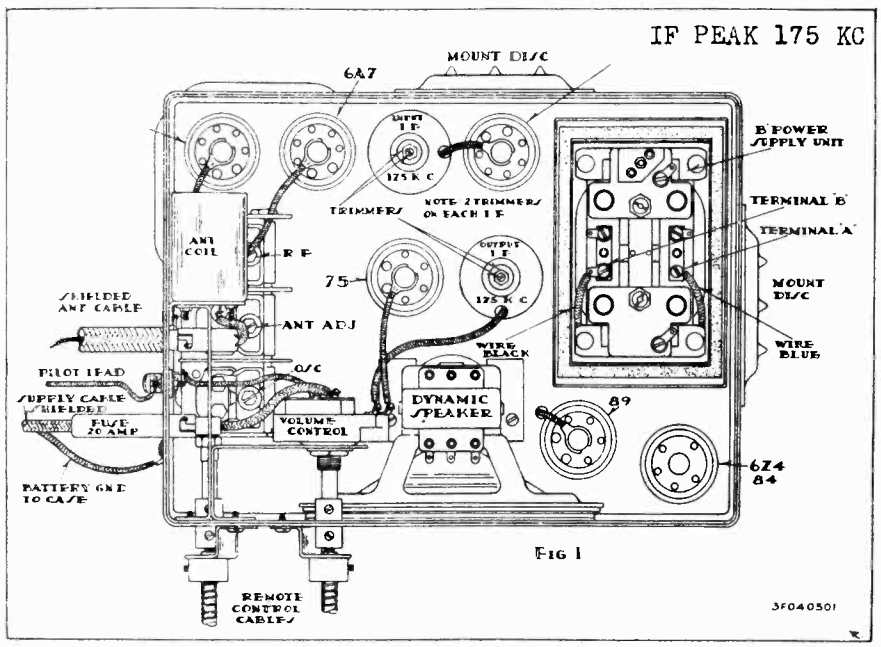


FIG 1

SCHEMATIC CIRCUIT DIAGRAM

MODEL 660 AUTORADIO

See instructions for serial notes etc.

PARTS LIST

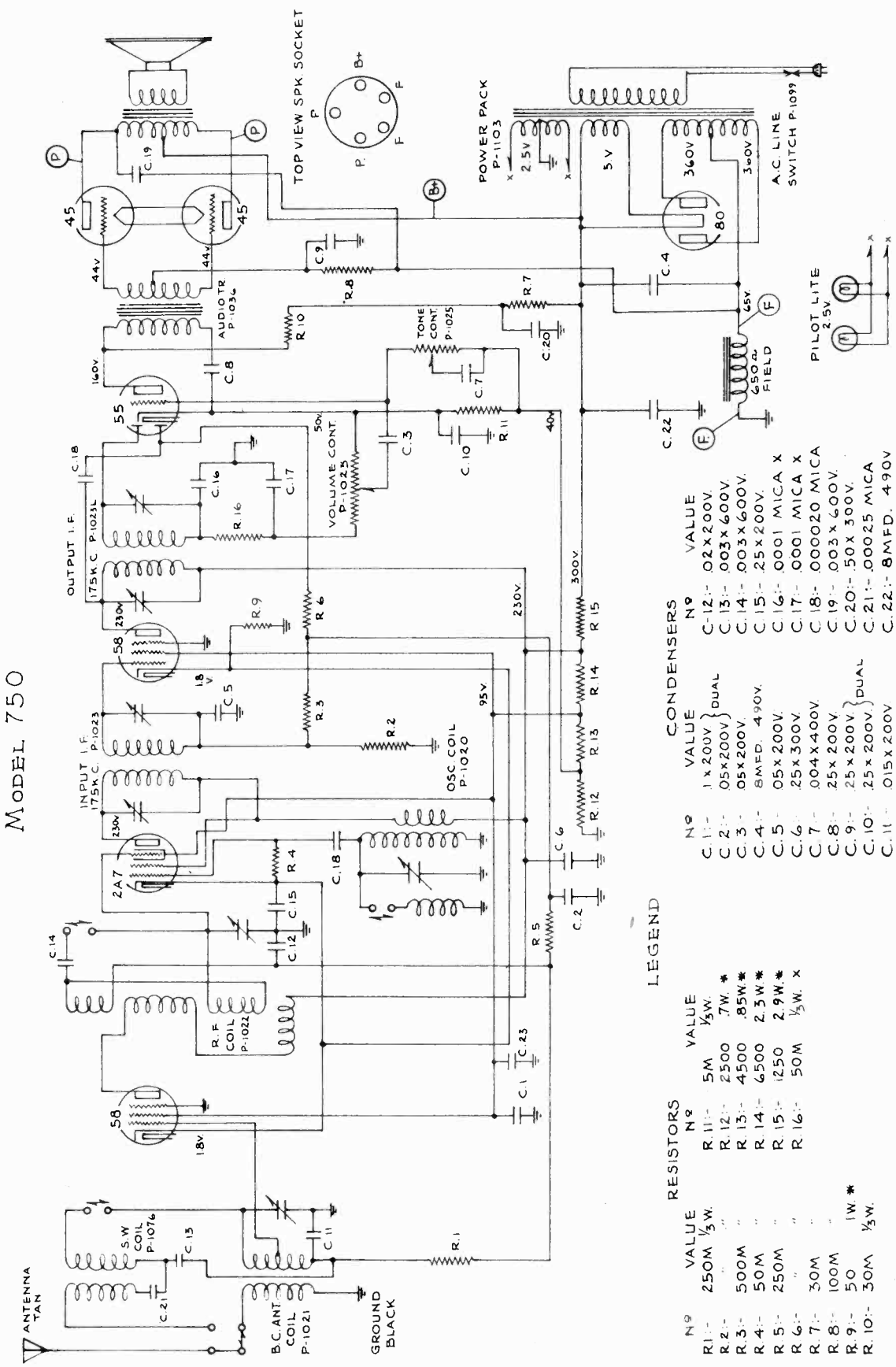
Part No.	Description	List Price Each
A 660	Battery Cable—Plug Type	1.75
B 104	Cable Shaft Brackets	.35
B 660	Antenna Cable—Plug Type	.80
C 106	Shaft Couplings	.35
C 117	"A" Choke—Small	.25
C 118	"A" Choke—Large	.35
C 144	Dual .1-200 Volt Condenser	.35
C 152	.00025 Mica Condenser	.20
C 155	.0005 Mica Condenser	.20
C 522	.01-400 Volt Condensers	.25
C 531A	Dual .05 Condenser	.30
C 535	Dual .1—200 Volt Condenser	.35
C 541B	3 Gang Condenser	3.75
C 543	R.F. Coil	.80
C 543A	Antenna Coil	.80
C 543B	Oscillator Coil	.70
C 543C	Input I.F. Transformer	1.25
C 543D	Output I.F. Transformer with Parts	2.50
C 547	.1-200 Volt Condenser	.30
C 549	690 Ohm Choke	1.40
C 550	8-8 Mfd. Electrolytic Condenser	2.25
C 551	1 Mfd.—120 Volt Condenser	.35
C 553	.05-200 Volt Condenser	.25
C 554	.5 Mfd. Generator Condenser	.50
R 232A	Special 500M Ohm Resistor Identified with 2 Yellow Dots	.35
R 279	30,995 Ohm Resistor	.60
R 281	100 Ohm Resistor	.20
S 338	18" Volume Control Shaft	1.25
S 339	18" Selector Control Shaft	1.25
S 338S	Special 24" Volume Control Shaft	1.50
S 339S	Special 24" Selector Control Shaft	1.50
V 660	Complete "B" Unit—0AK	8.00
V 603	Volume Control	1.50
660	Remote Control Head Complete Less Shafts	5.00
	20 Ampere Fuses	.10
	Mounting Bolts	.10
	All carbon resistors	.20
	All sockets	.20
	Dynamic speakers	5.00

BELMONT RADIO CORP.
1257 Fullerton Avenue
Chicago, Illinois

Made in U. S. A.

BELMONT RADIO CORP.

MODEL 750



LEGEND

RESISTORS

Nº	VALUE	Nº	VALUE
R.1 -	250M ½W.	R.11 -	5M ½W.
R.2 -	" "	R.12 -	2500 .7W. *
R.3 -	500M "	R.13 -	4500 .85W. *
R.4 -	50M "	R.14 -	6500 2.5W. *
R.5 -	250M "	R.15 -	1250 2.9W. *
R.6 -	" "	R.16 -	50M ½W. x
R.7 -	30M "		
R.8 -	100M "		
R.9 -	50 1W. *		
R.10 -	30M ½W.		

CONDENSERS

Nº	VALUE	Nº	VALUE
C.1 -	1 x 200V } DUAL	C.12 -	.02 x 200V.
C.2 -	.05 x 200V }	C.13 -	.003 x 600V.
C.3 -	.05 x 200V.	C.14 -	.003 x 600V.
C.4 -	8 MFD. 490V.	C.15 -	.25 x 200V.
C.5 -	.05 x 200V.	C.16 -	.0001 MICA x
C.6 -	.25 x 300V.	C.17 -	.0001 MICA x
C.7 -	.004 x 400V	C.18 -	.000020 MICA
C.8 -	.25 x 200V	C.19 -	.003 x 600V.
C.9 -	.25 x 200V. } DUAL	C.20 -	.50 x 300V.
C.10 -	.25 x 200V }	C.21 -	.00025 MICA
C.11 -	.015 x 200V	C.22 -	8 MFD. 490V
		C.23 -	5 MFD. 150V

NOTE:- NUMBERS PREFIXED BY LETTER 'P' ARE PARTS.

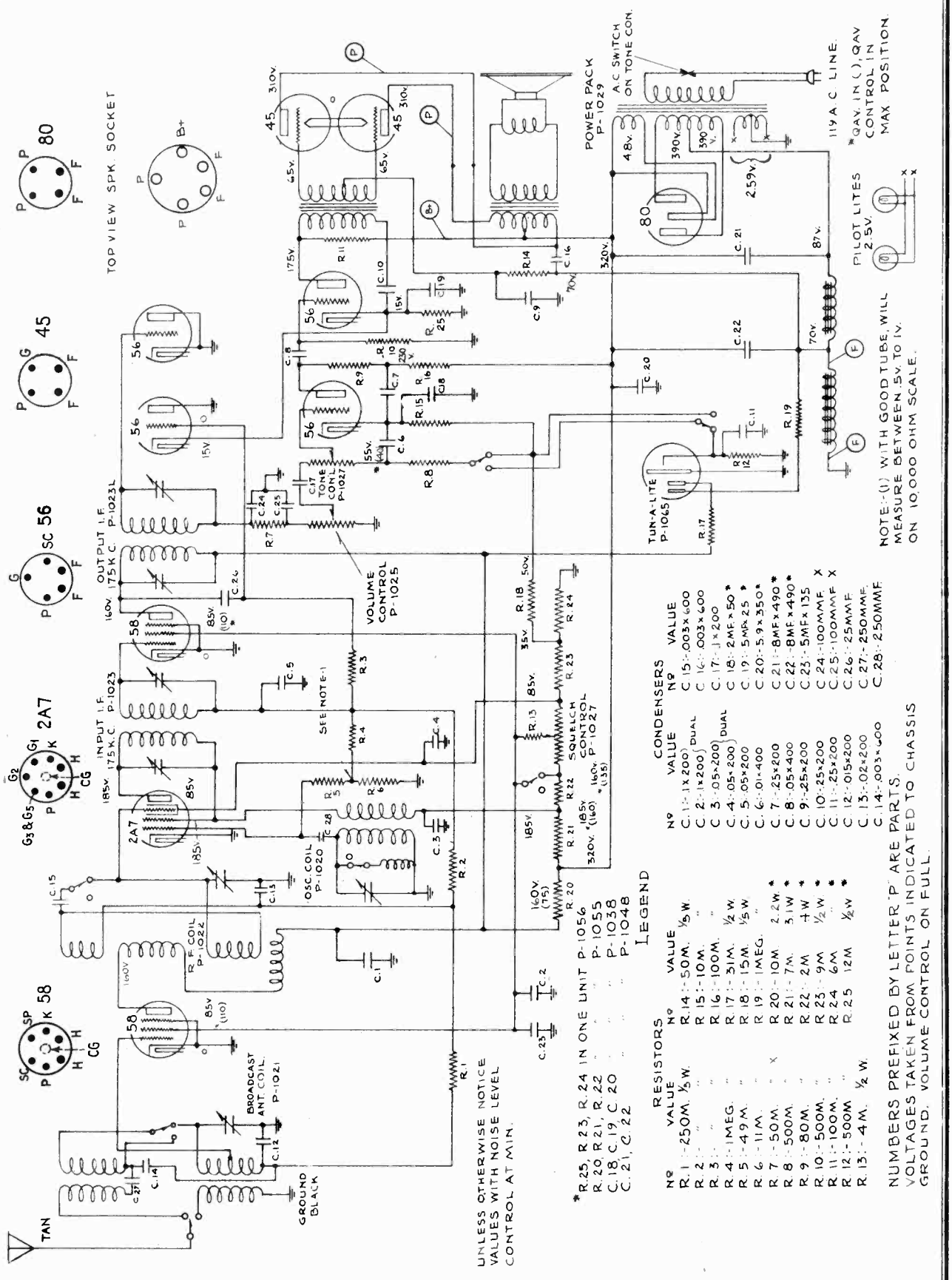
VOLTAGES TAKEN FROM POINTS INDICATED TO CHASSIS GROUND. VOLUME CONTROL ON FULL, WITH 119V. A.C. LINE.

*R.9, R.12, R.13, R.14 & R.15 IN ONE UNIT P-1104

xRESISTOR, R.16 & CONDENSERS C.16, C.17 IN OUTPUT I.F. CAN.

MODEL 1050
Schematic

BELMONT RADIO CORP.

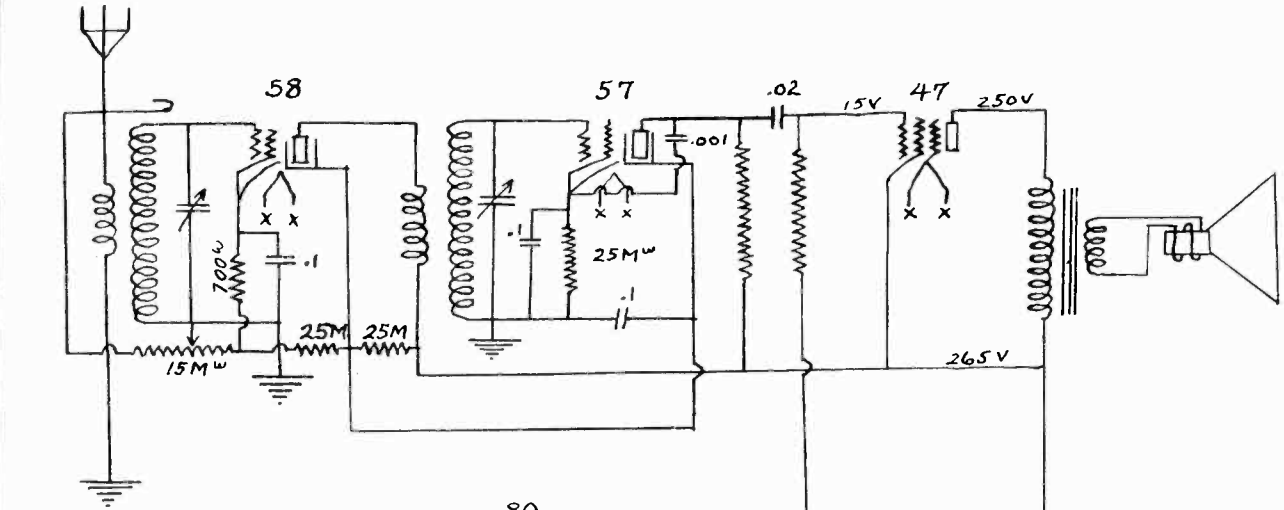


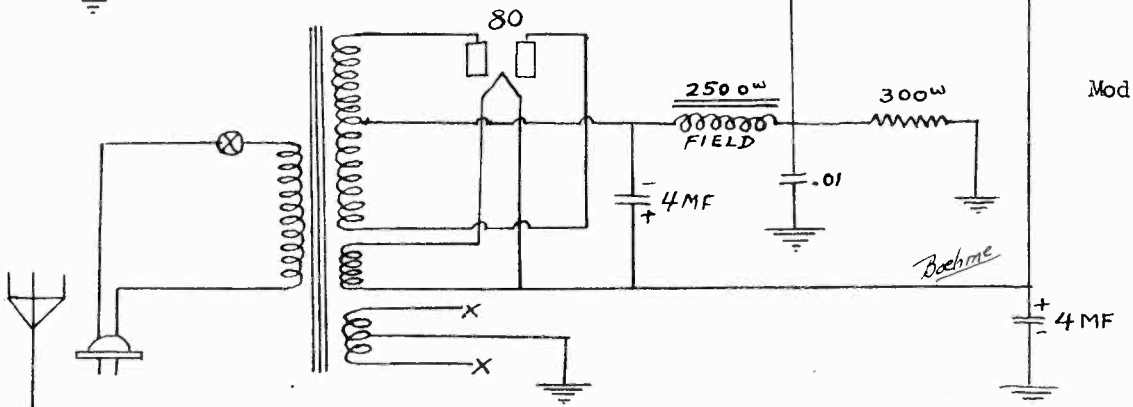
RESISTORS			
Nº	VALUE	Nº	VALUE
R. 1 -	250M. ½ W.	R. 14 -	50M. ½ W.
R. 2 -	" "	R. 15 -	10M. "
R. 3 -	" "	R. 16 -	100M. "
R. 4 -	1MEG. "	R. 17 -	3¼M. ½ W.
R. 5 -	49M. "	R. 18 -	15M. ½ W
R. 6 -	11M. "	R. 19 -	1MEG. "
R. 7 -	50M. " X	R. 20 -	10M 2.2W. *
R. 8 -	500M. "	R. 21 -	7M. 3 W *
R. 9 -	80M. "	R. 22 -	2M. 1W *
R. 10 -	500M. "	R. 23 -	9M ½ W *
R. 11 -	100M. "	R. 24 -	6M ½W *
R. 12 -	500M "	R. 25 -	12M ½W *
R. 13 -	4M. ½ W.		

CONDENSERS			
Nº	VALUE	Nº	VALUE
C. 1 -	1x200	C. 15 -	.003x600
C. 2 -	1x200 DUAL	C. 16 -	.003x600
C. 3 -	.05x200	C. 17 -	.1x200
C. 4 -	.05x200 DUAL	C. 18 -	2MFx50 *
C. 5 -	.05x200	C. 19 -	5MFx25 *
C. 6 -	.01x400	C. 20 -	5.9x350 *
C. 7 -	.25x200	C. 21 -	8MFx490 *
C. 8 -	.05x400	C. 22 -	8MFx490 *
C. 9 -	.25x200	C. 23 -	5MFx135
C. 10 -	.25x200	C. 24 -	100MMF X
C. 11 -	.25x200	C. 25 -	100MMF X
C. 12 -	.015x200	C. 26 -	25MMF
C. 13 -	.02x200	C. 27 -	250MMF
C. 14 -	.003x600	C. 28 -	250MMF

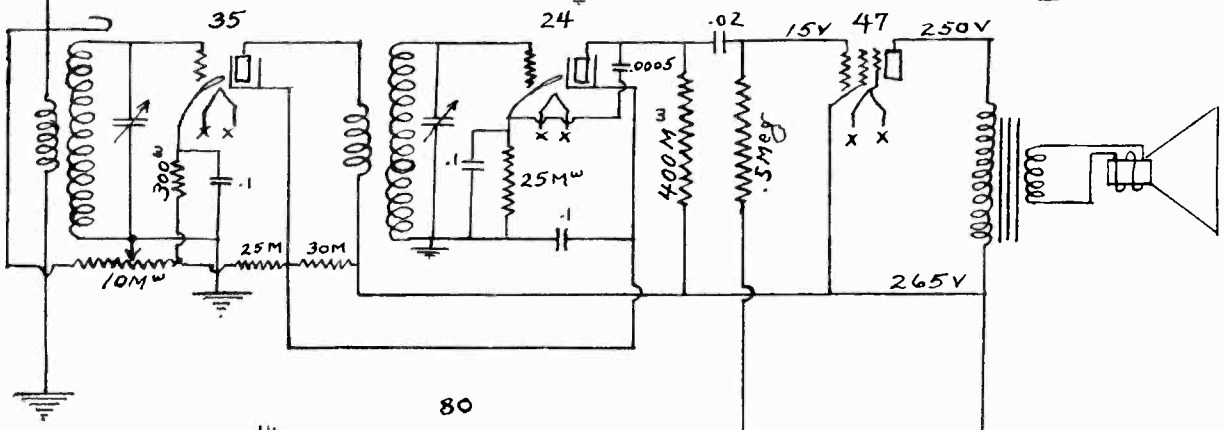
C.R.C.

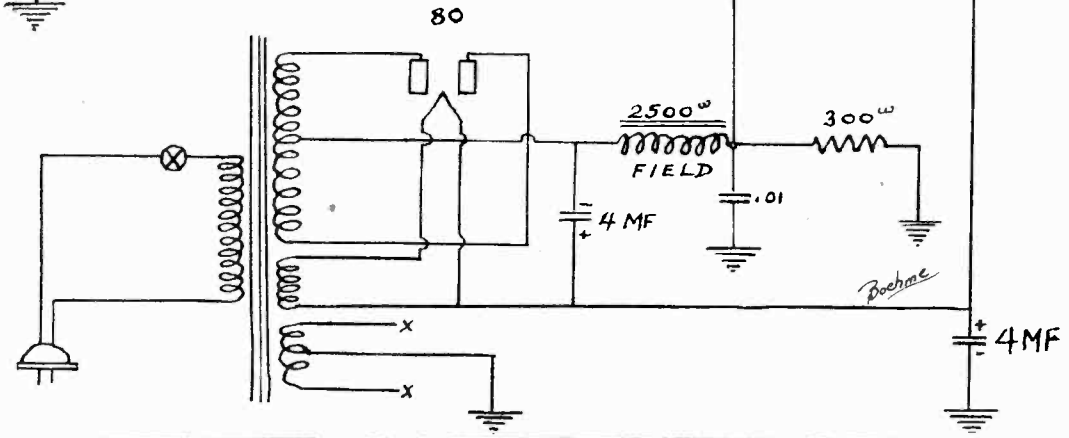
MODEL 24-45
MODEL 24-27





Model 58-47

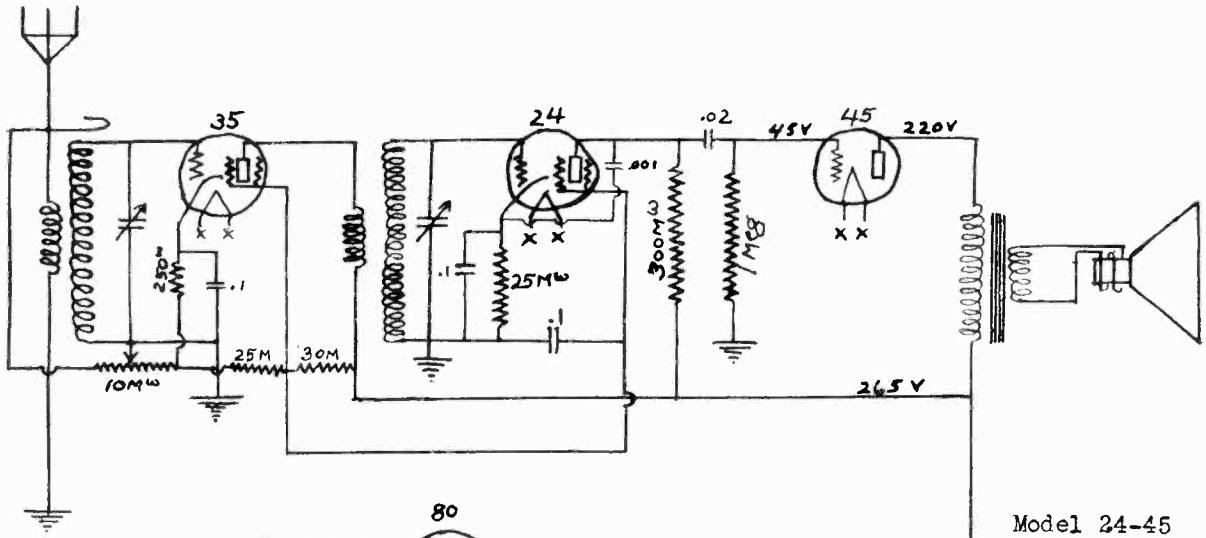




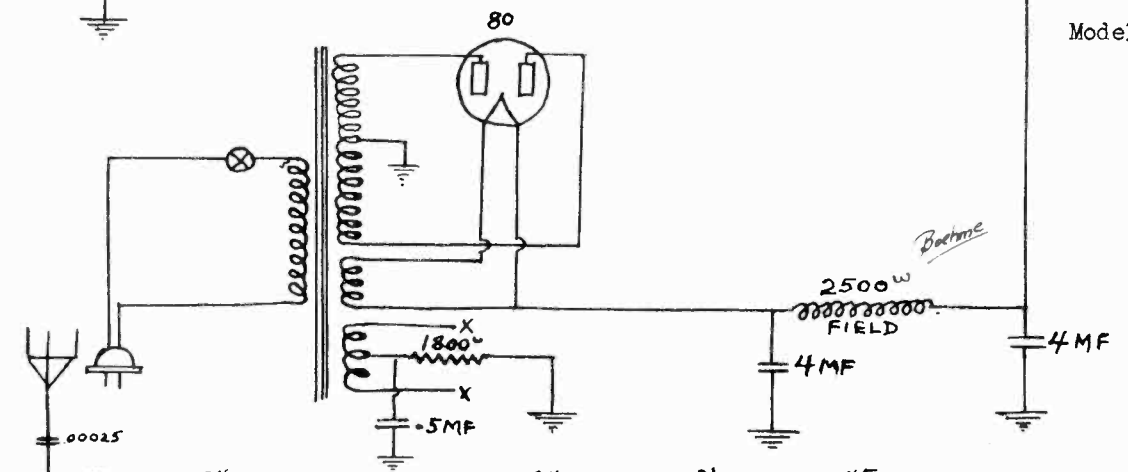
Model 24-47

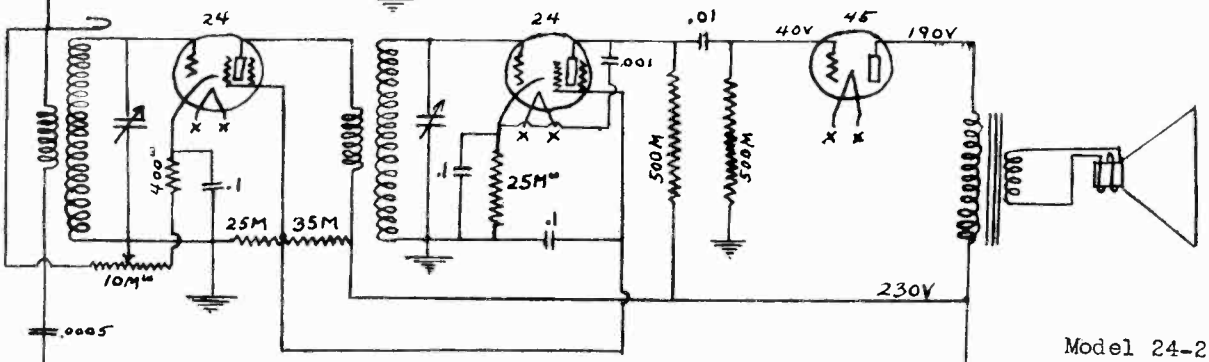
MODEL 24-47
MODEL 58-47

C.R.C.

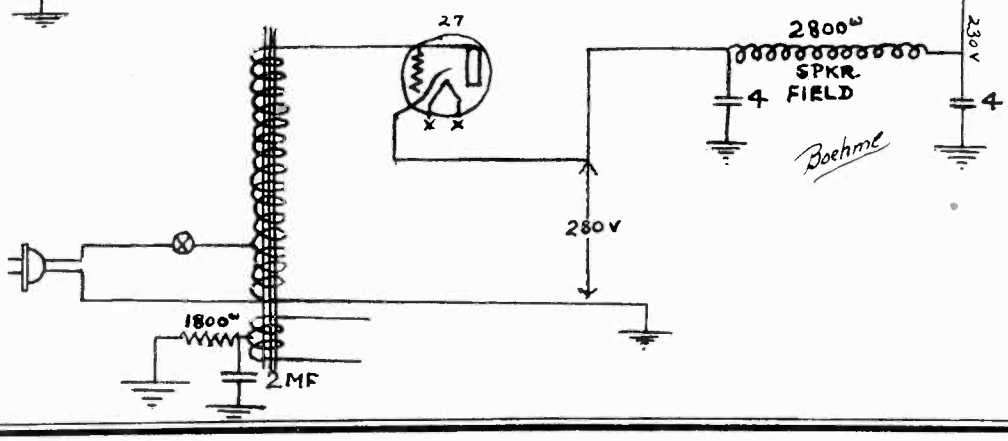


Model 24-45





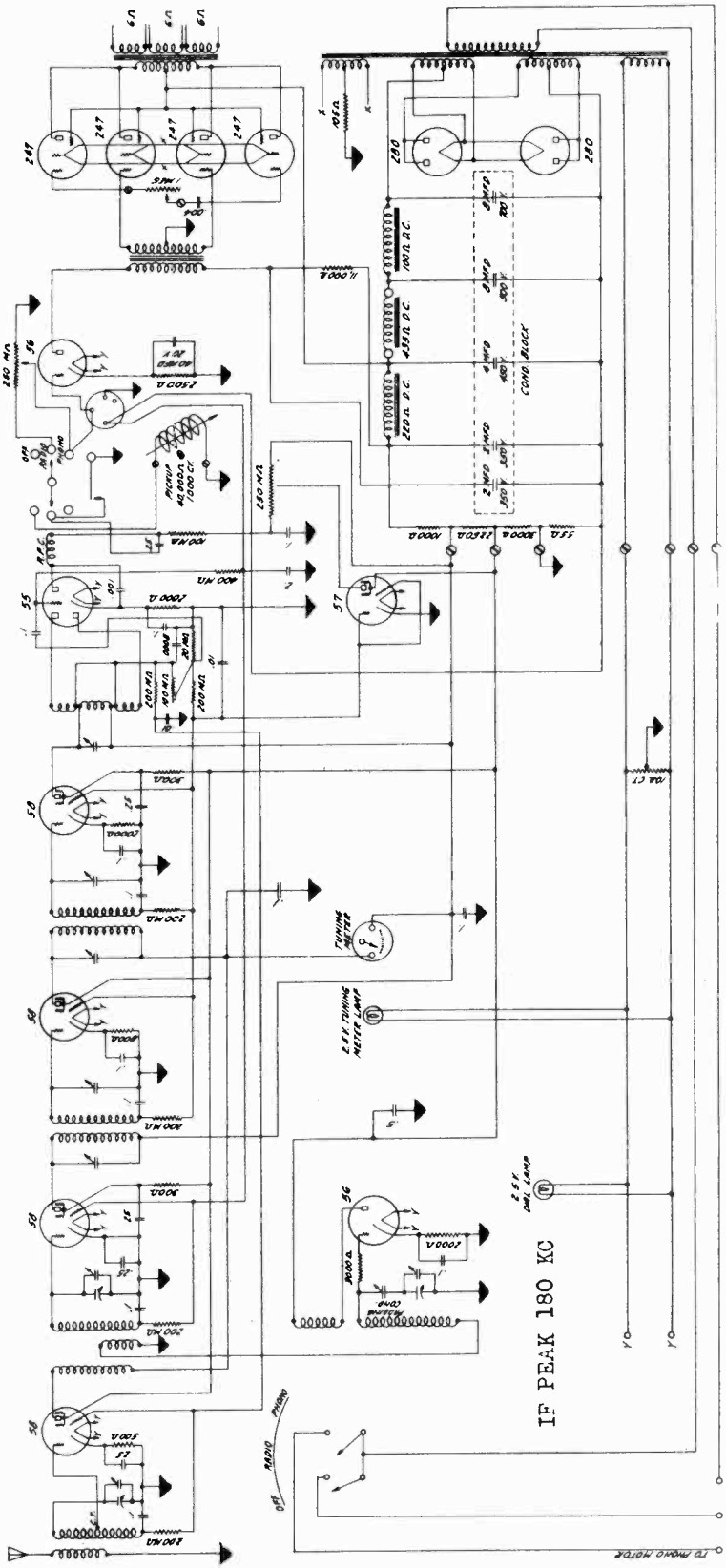
Model 24-27



CAPEHART CORPORATION

MODEL 400-A Series
Tuner-Amplifier
Schematic

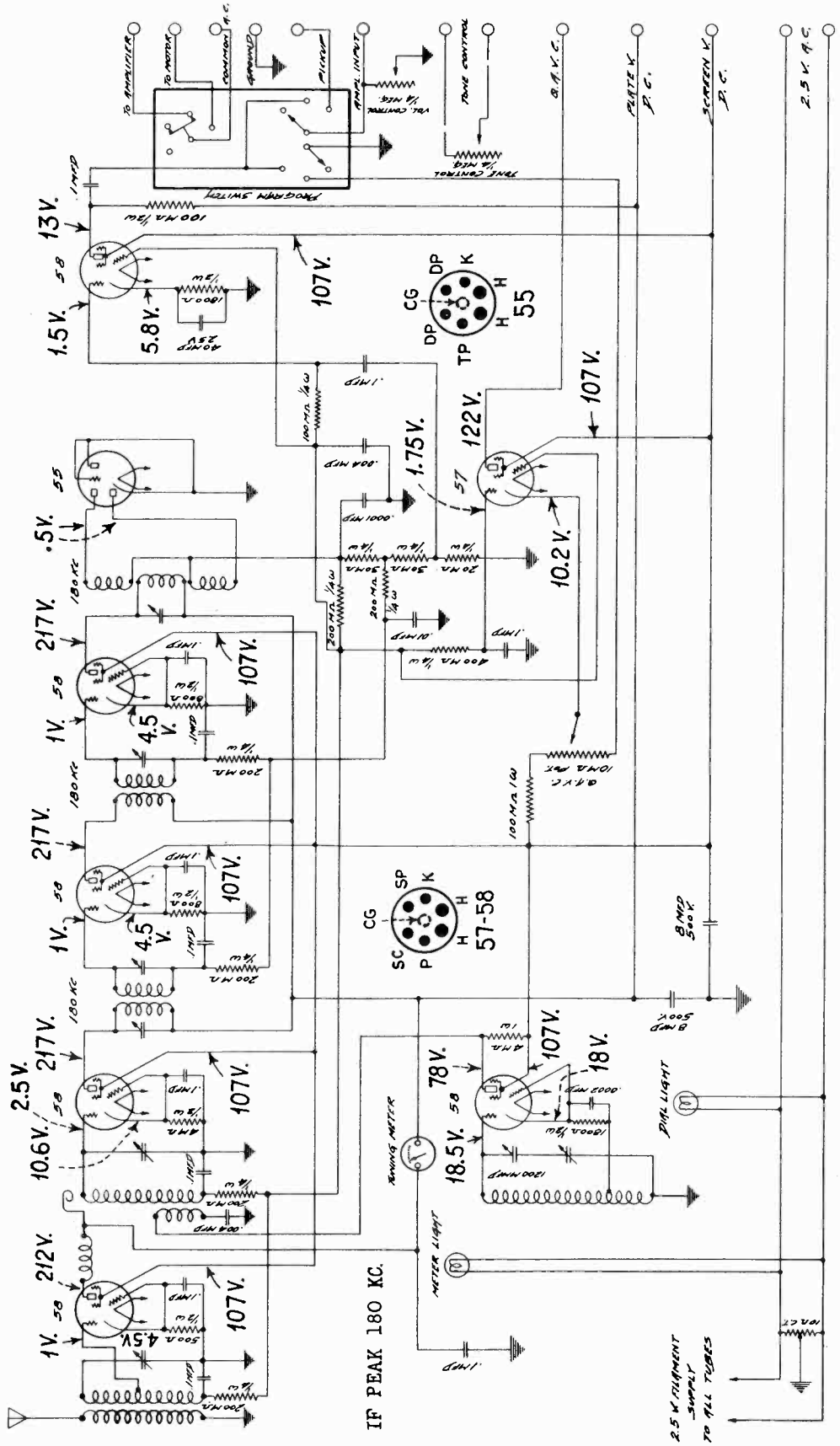
W-820



-SCHEMATIC - CAPEHART TUNER & AMPLIFIER 400A SERIES-

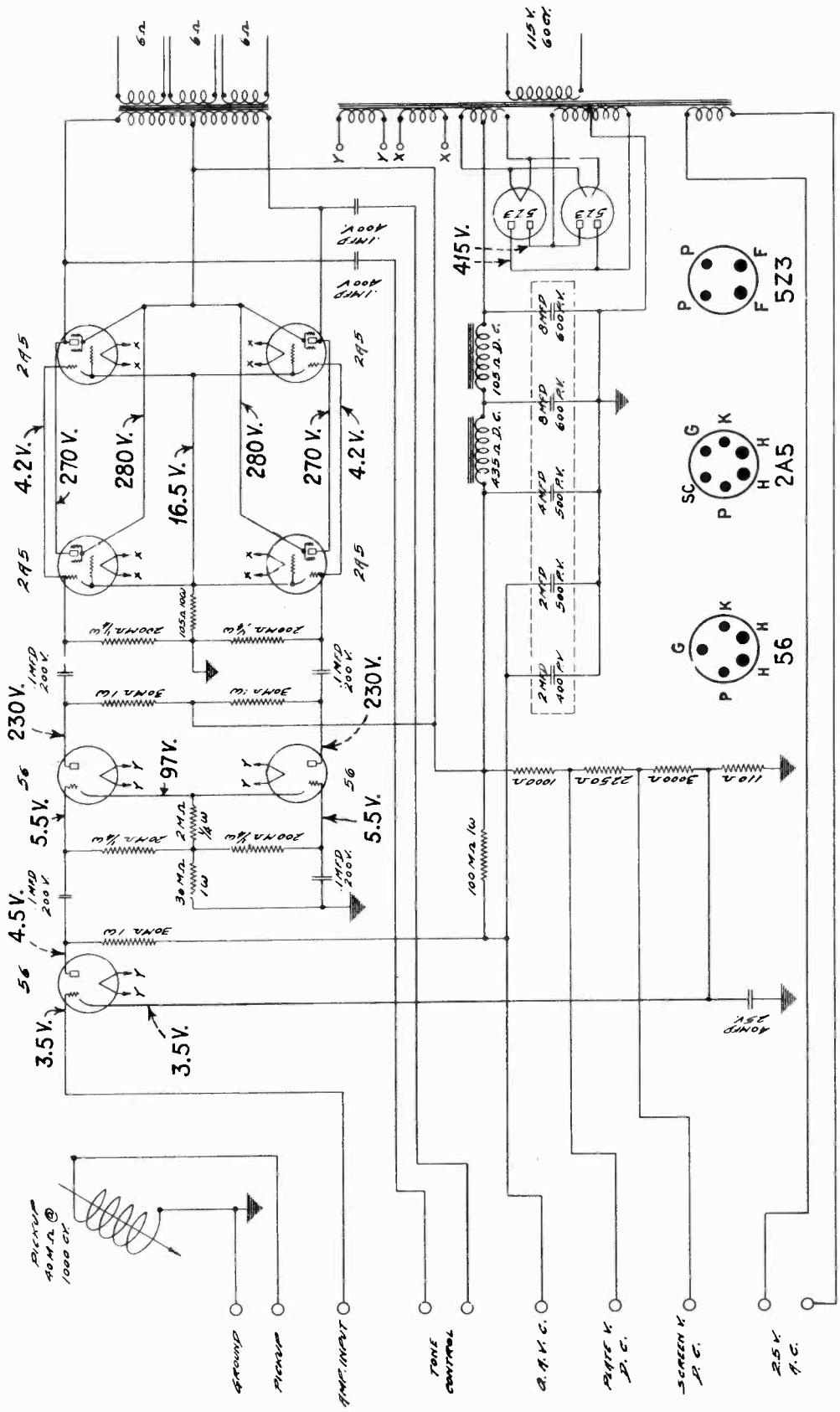
MODEL 400-B
Tuner Schematic

CAPEHART CORPORATION



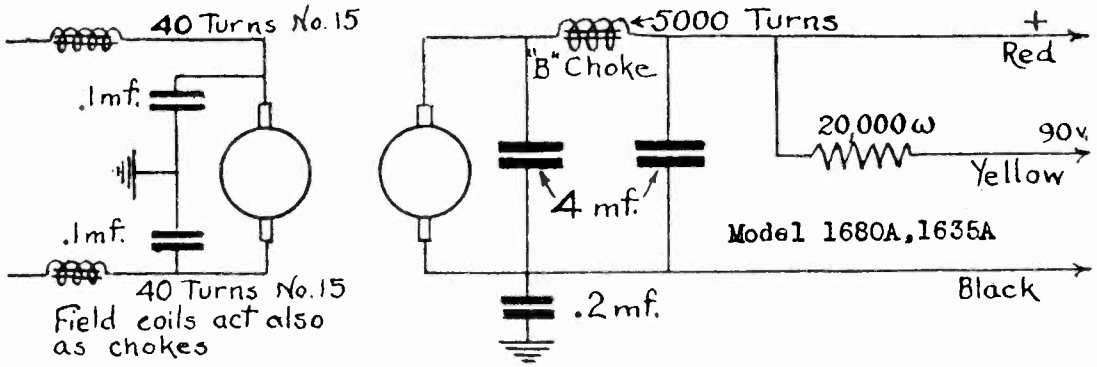
CAPEHART CORPORATION

MODEL 400-B
Amplifier Schematic

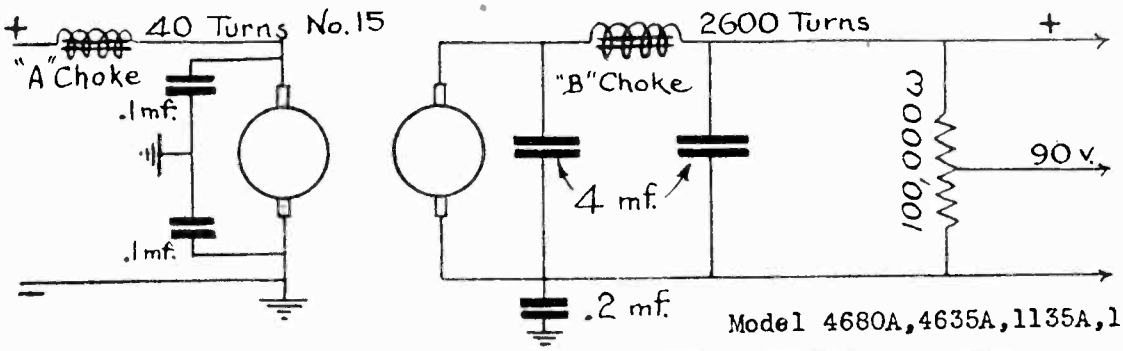


CARTER GENEMOTOR CORP.

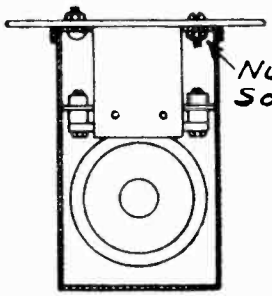
MODEL 1680-A
MODEL 1635-A
MODEL 4680-A
MODEL 4635-A
MODEL 1135-A
MODEL 1180-A



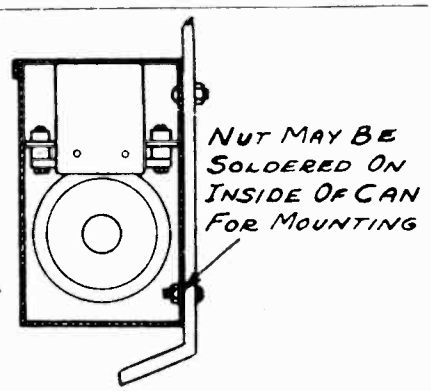
Model 1680A, 1635A



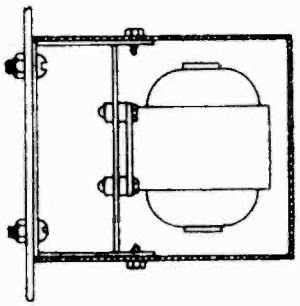
Model 4680A, 4635A, 1135A, 1180A



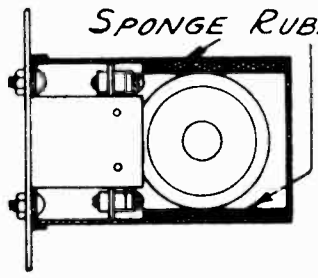
SHOWING UNDER CAR MOUNTING



UNDER THE COWL MOUNTING

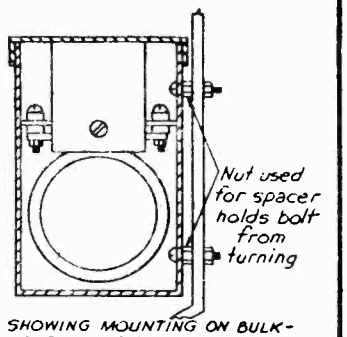


DO NOT MOUNT IN THIS POSITION



WE DO NOT RECCOMEND THIS TYPE MOUNTING. IF MOUNTED IN THIS POSITION USE SPONGE RUBBER AS SHOWN ABOVE.

Radio sets having only two B. wires do not require an intermediate tap at the Eliminator as the necessary resistors are in the set. Sets having three B wires require an intermediate tap. This tap is set at the factory at 90 volts on 180 volt output and 67½ volts on 135 volt output. Usually this is the proper setting for the average set, and should not be varied unless the set fails to operate properly. To change the intermediate tap voltage, loosen the screw that holds the contact on the resistance unit. The tap may be moved to a position where best results are obtained. Then tighten screw. When Eliminators with intermediate tap are used with set having 2 B wires disregard the intermediate tap, connect the 2 B wires from the set to B- and B+ on the Eliminator. Some sets work better if the B- terminal on the Eliminator is grounded to frame. Others require a small by pass condonser from B to ground.



SHOWING MOUNTING ON BULKHEAD UNDER THE COWL. CAN BE MOUNTED ON MOTOR SIDE OF BULKHEAD IF DESIRED

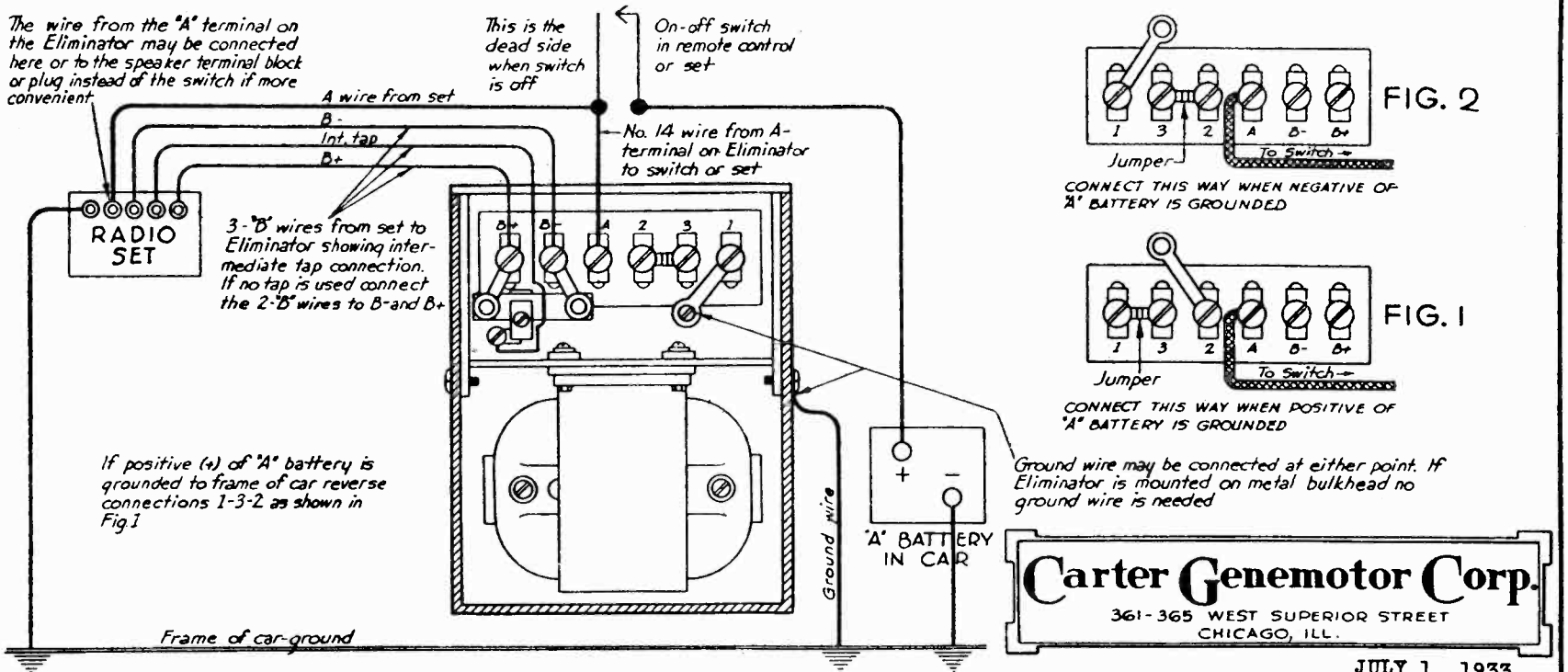


FIG. 2

CONNECT THIS WAY WHEN NEGATIVE OF "A" BATTERY IS GROUNDED

FIG. 1

CONNECT THIS WAY WHEN POSITIVE OF "A" BATTERY IS GROUNDED

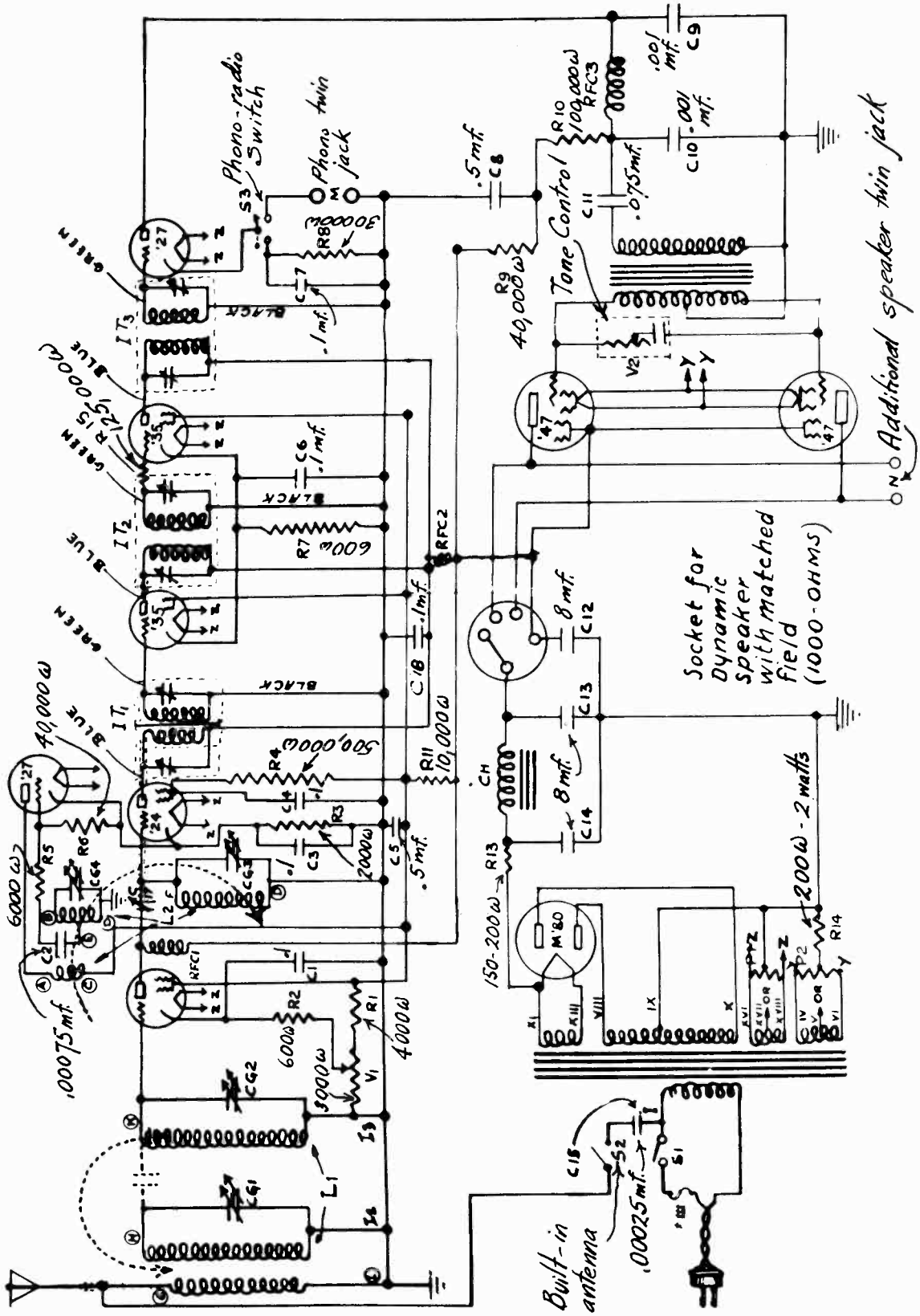
Carter Genemotor Corp.

361-365 WEST SUPERIOR STREET
CHICAGO, ILL.

JULY 1, 1933

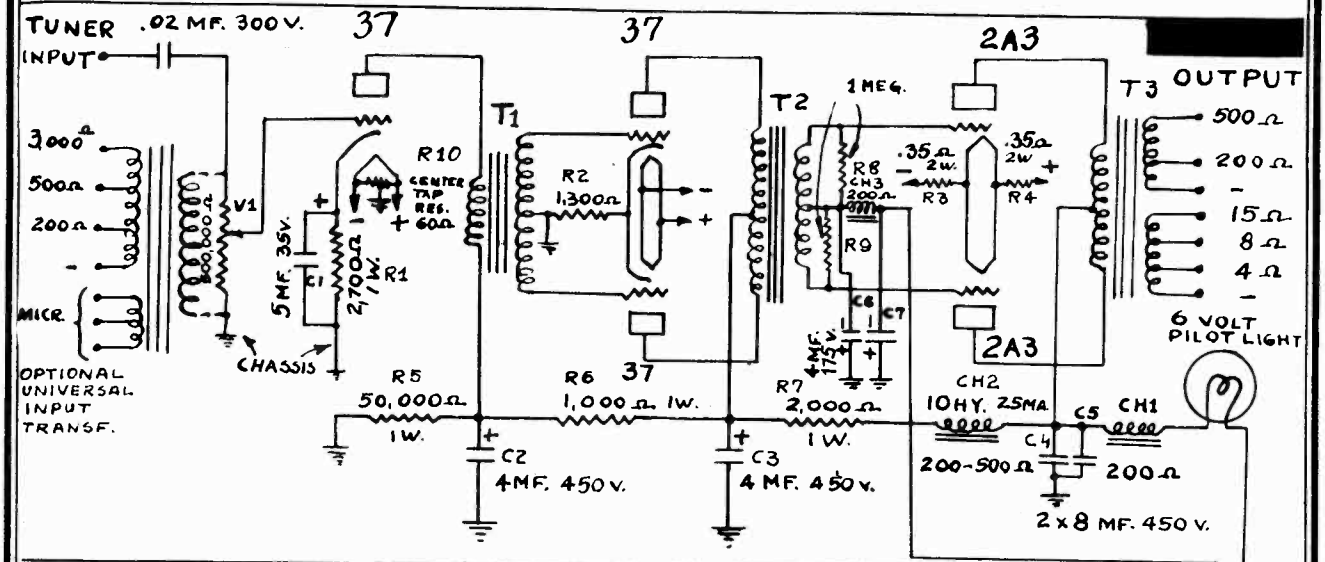
MODEL 525
Schematic

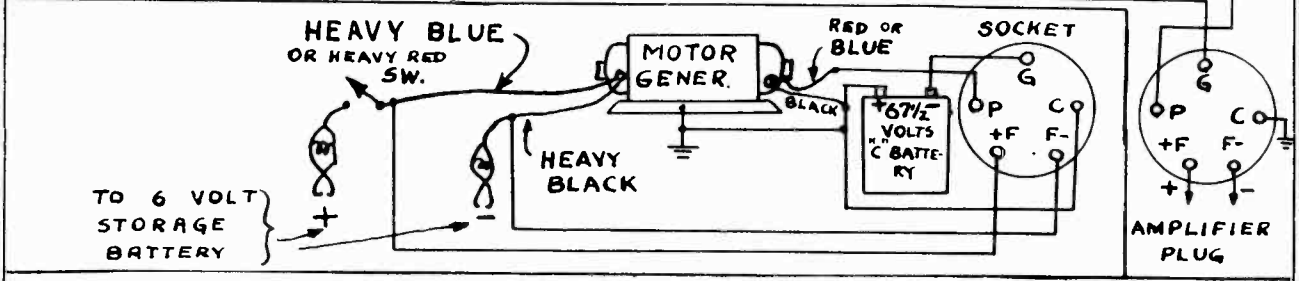
COAST TO COAST RADIO CORP.

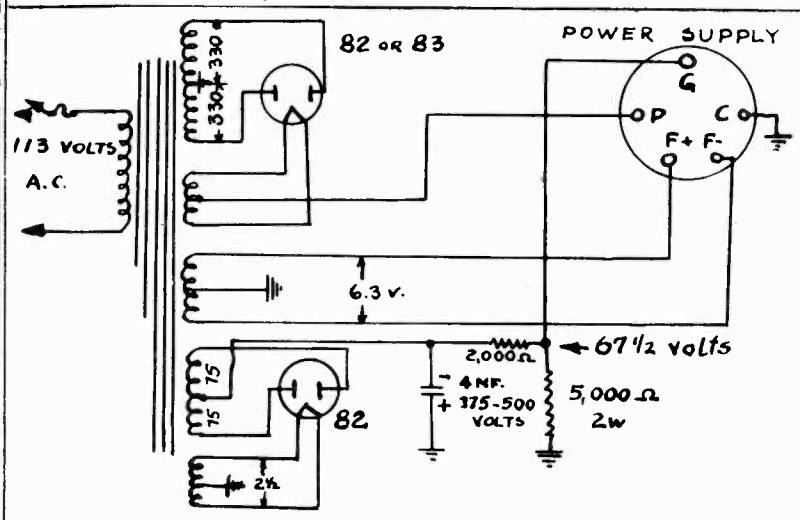


MODEL D-3008
Schematic

COAST TO COAST RADIO CORP.







A.C. POWER SUPPLY FOR [redacted] D3171

NOTE: When Amplifier is used in conjunction with a tuner place a .006 mfd. 1000 V. condenser across each rectifier plate and corresponding high voltage center tap.

NO. 654A	COAST TOCOAST RA.C. NEW YORK N.Y.
Sam J. LeMonte	2A3 DUAL P.P. -20W AMPLIFIER # D3008

PARTS LIST Nº 654A (Note: If 56 Tubes are Used, Omit R3 and R4)

R1 -1- 2700 ohms 1 Watt Resistor
R2 -1- 1300 " 1 " "
R3 & R4-2 -.35 3 " "
R5 -1- 50,000 ohms 1 Watt "
R6 -1- 1000 " 1 " "
R7 -1- 2000 " 1 " "
R8 & R9 -1 Megohm 1 " "
C1 -1- 10 mfd. 75v. electrolytic condenser
C2 & C3-2-4 mfd. 175v.500v. " "
C4 & C5-2-8 mfd. 500v. " "
C6 & C7-2-4 mfd. 500v. " "
1 6 volt pilot lamp & socket
CH1 -1- 200 ohms 15 hy. 125 MA. filter choke
CH2 -1- 200 " 15 " 60 " " "
CH3 -1- 200 " 15 " 30 " " "
V1 -1-500,000 ohm potentiometer (gain control) and plate
R10 - 60 Ohms Center Tap Resistor

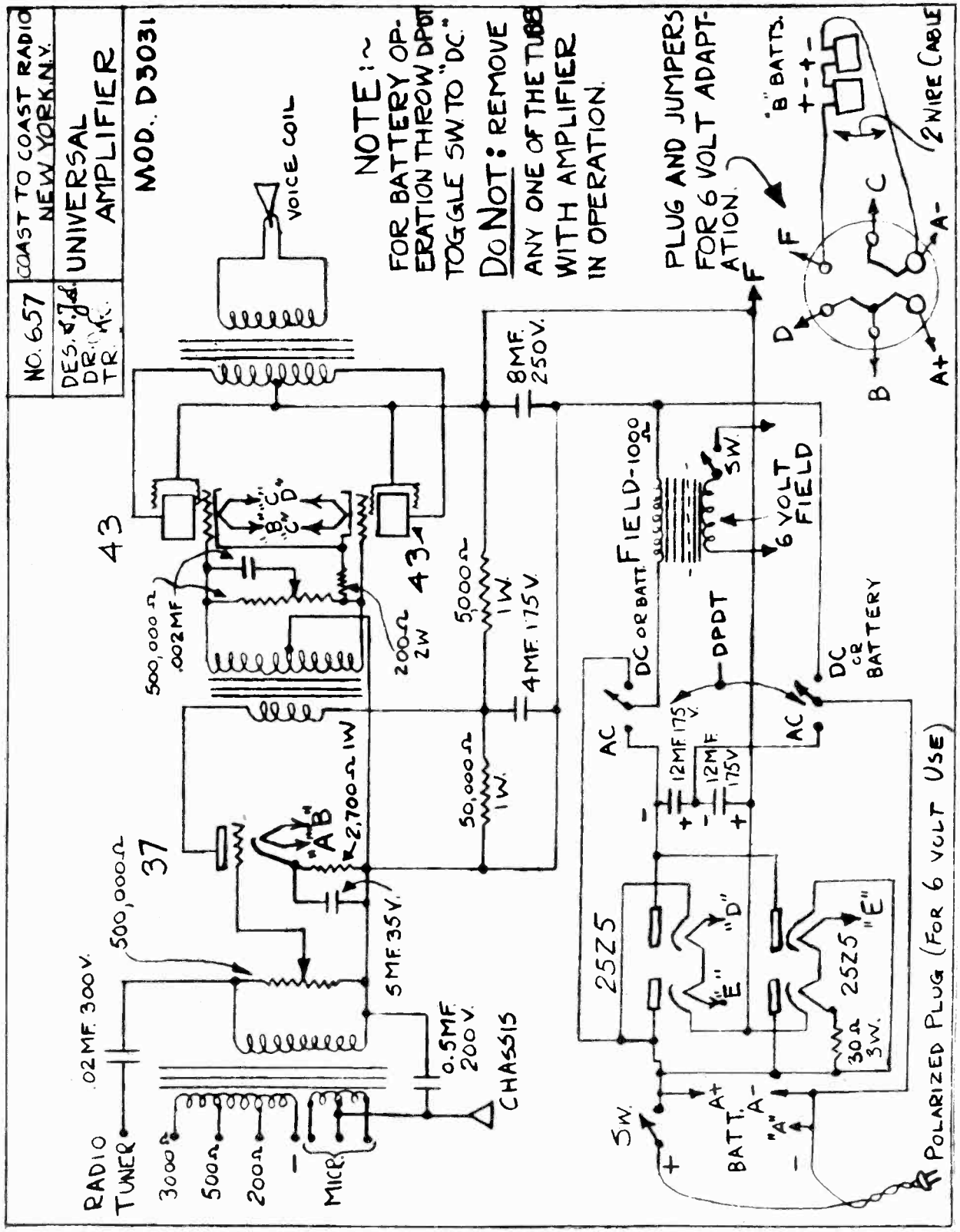
V2 -1- Piltermatic tone cont.(connect across grids of 2A3 tubes) and plate
T1 PP input transformer
T2 PP interstage transformer #164-A
T3 PP output transformer #291
1 Length 7 wire flexible cable
1 Five prong plug
2 Sets triple binding posts
3 Female receptacles for voice coil outlets & hdwe. for mounting.
3 37 or 56 sockets, 2-2A3 sockets
1 Tube shield and base
2 Bakelite knobs
1 Coil filament wire
1 Coil hookup wire
1 Chassis
4 Shield cans

A.C. POWER PACK
1 Power trans.#95or 95A
1 Single Pole single throw toggle switch
1 Fuse block
1 Fuse 2 amp 250v.
2 82 sockets
1 UY type blank socket
1 8mfd 500v.elec.cond.
1 4 " " " "
1 2000 ohm 1 watt res.
1 5000 ohm 2 watt res.

D.C. POWER PACK
1 Motor gen.320v.115MA
1 Single throw single pole toggle switch
1 Blank UY tube socket
2 Binding posts for "C supply

COAST TO COAST RADIO CORP.

MODEL D 3031
Schematic



MODEL 4978
Schematic

COAST TO COAST RADIO CORP.

MOD. 4978

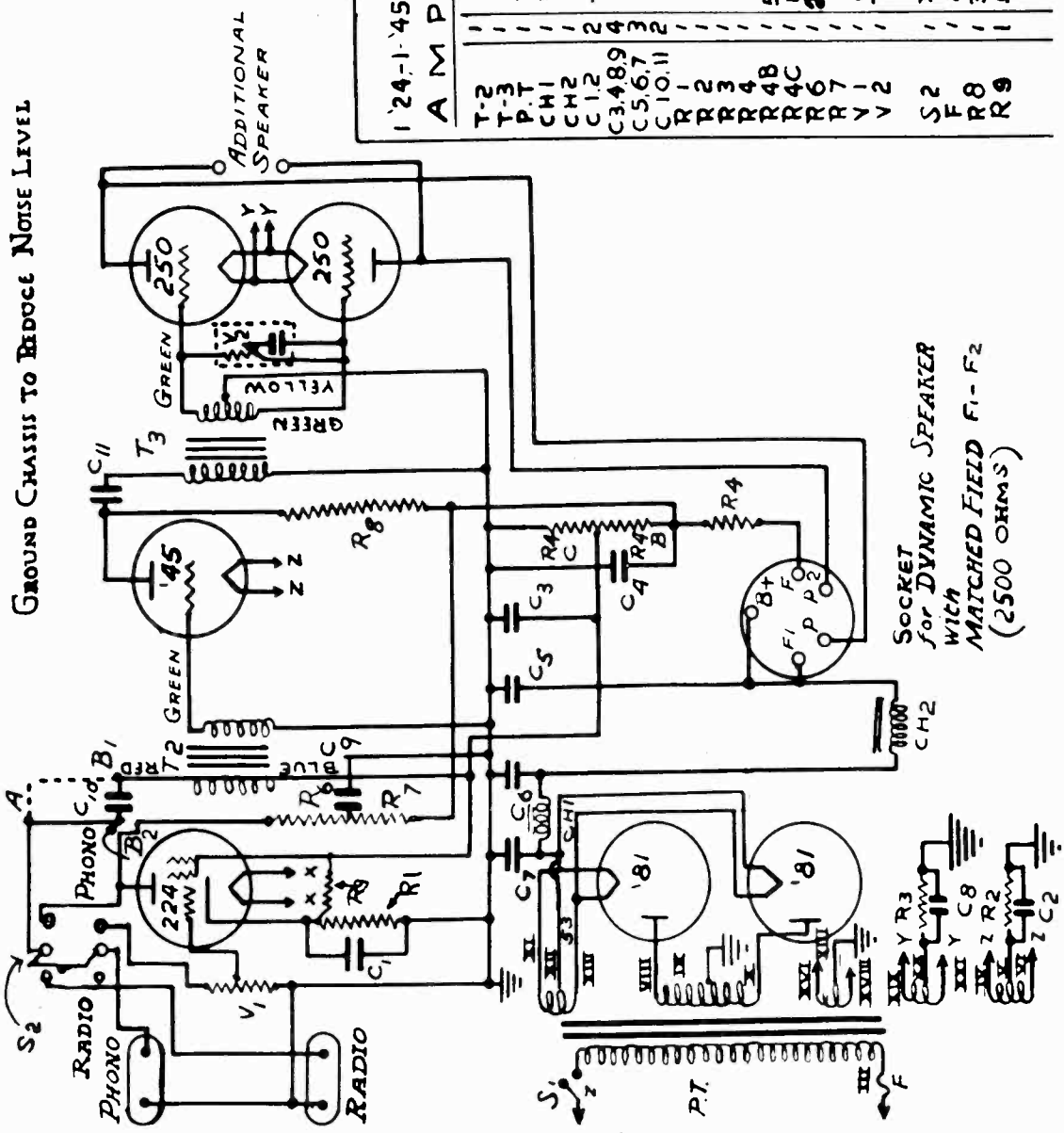
AB_1 - ORDINARY TUNER CONNECTION
AB_2 - FOR SELF EXCITED DETECTORS

KEEP LINE VOLTAGE BELOW 115 VOLTS

GROUND CHASSIS TO REDUCE NOISE LEVEL

MODEL 4979
'24-1-'45-2-'50-2-'81
AMPLIFIER

T-2	1	INPUT TRANSFORMER
T-3	1	INTERSTAGE CHOKE
P.T	1	POWER " 80MA
CH1	1	FILTER CHOKE 30 D.C.
CH2	1	FILTER CHOKE
C1.2	2	.5 MF 200 VOLTS
C3.4.8.9	4	1 MF 400 VOLTS
C5.6.7	3	2 MF 1000 VOLTS
C10.11	2	.06 MF
R-1	1	2000 Ω 1 WATT
R2	1	1500 Ω 2 WATT
R3	1	920 Ω 10 WATT
R4	1	2000 Ω 4 WATT
R4B	1	50000 Ω 1 WATT
R4C	1	100000 Ω 1 WATT
R6	1	2000000 Ω 1 WATT
R7	1	50000 Ω 1 WATT
V-1	1	0-250000 Ω VOL. CONTROL
V-2	1	TONE CONTROL
S2	1	DP2T SWITCH
F	1	2 AMP. FUSE
R8	1	3500 OHMS 5 WATTS
R9	1	50,000 OHMS 1 WATT



COLONIAL RADIO CORP.

MODEL 106-B
Notes

SERVICE NOTES
MODEL 106B

INTRODUCTION

The COLONIAL Model 106B automobile receiver is a superheterodyne with automatic volume control and push pull pentode output. In order to minimize the drain on the car's storage battery only six tubes are used, all of the low current automotive type. However, because one tube functions as a combination translator oscillator and because a single duo-diode-triode tube serves as detector, AVC, and first audio, the six tubes fill the same functions that nine tubes would were a separate tube used for each function.

A highly developed power supply unit draws its current from the car's storage battery and supplies all of the "B" and "C" voltages required by the receiver. Built-in filters and complete shielding prevent the introduction of noise or hum.

The total current drawn from the car's storage battery by tubes, power supply and dynamic speaker is only 5.4 amperes, approximately the same as that drawn by a single headlight bulb.

Litz wound coils make it possible to secure the very utmost gain and selectivity from each circuit. The ultra high gain litz wound antenna coil provides high signal input from the necessarily small antenna system used in automobiles, reducing to a minimum the tube hiss which accompanies high amplification and LOW signal input. This special type of antenna coil, in effect, makes the small car antenna the equivalent of a very much larger one used with the ordinary type of antenna coil.

THE COMBINATION OSCILLATOR - TRANSLATOR

The combination oscillator - translator (first detector) is shown schematically in Fig. 32 .

Coils (1) and (2) comprise the grid circuit; coils (3), (4) and (5) the plate circuit. The amplified broadcast signal is applied to the grid of the '36 translator - oscillator tube by coil (1) which is tuned to the broadcast signal's frequency. Because Coils (2) and (3) are coupled together through coil (4), feedback occurs and the tube is made to oscillate. The frequency of oscillation, determined by the tuned coil (4) is made 175 kc higher than the frequency of the broadcast signal and of coil (1). Since both the broadcast signal and a frequency 175 kc higher are impressed on the tube's grid, a 175 kc IF signal is created in the plate circuit of the tube. This 175 kc signal is selected by the tuned primary of the IF input transformer and coupled to the grid of the '39 IF tube.

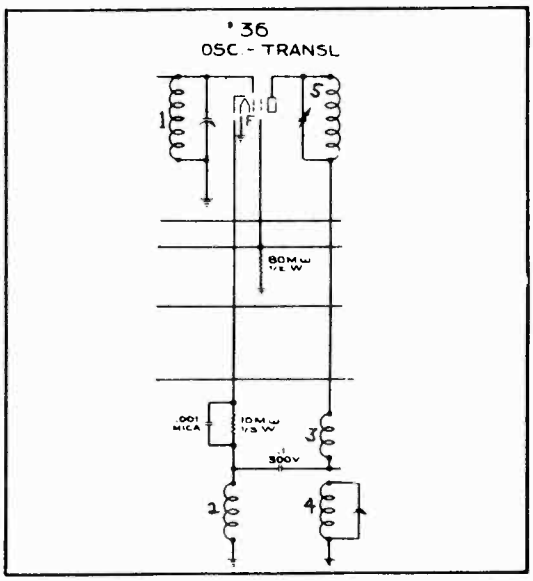


FIG. 32

THE DETECTOR - AVC - AUDIO STAGE

Fig. 33 shows the circuit of the 85 detector - AVC - audio stage. The signal voltage at the secondary of the IF output transformer is impressed across the 200M ohm resistor in series with the diode part of the 85 tube. The plates of the diode are paralleled, affording half wave rectification (detection). The RF component across the 200M ohm resistor is filtered out by the .0005 condenser and the 50M ohm resistor. The AF component is coupled through the .01 condenser to the grid of the triode portion of the 85 tube and there amplified. The 500M ohm variable voltage divider functions as the volume control.

MODEL 106-B
Notes, Cable data
Antenna condenser data

COLONIAL RADIO CORP.

The dc component of the rectified signal voltage across the 200M ohm resistor serves as the variable bias for the '36 RF and '39 IF tubes. Their fixed, residual bias is supplied by the 200 ohm resistor in their cathode circuit. The stronger the incoming signal, the greater becomes the dc drop due to rectified signal voltage across the 200M ohm resistor. This increased dc voltage drop biases the RF and IF tubes more negatively and cuts down their amplification. When the signal is weak, the dc drop across the 200M ohm resistor, is very low, the RF and IF bias is only that furnished by the 200 ohm fixed bias resistor, and amplification is made a maximum. The gain, then, varies inversely with the signal strength and the signal voltage at the input to the detector tends to remain at a constant value.

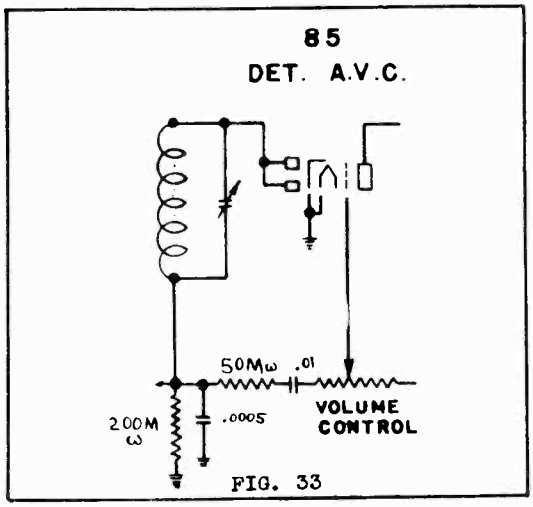


FIG. 33

ADJUSTING THE ANTENNA COMPENSATING CONDENSER

Although it is not necessary to do so, improved results sometimes can be had by adjusting the antenna compensating condenser to match the particular antenna used in the car.

Remove the chassis from its case and support it so that all cables can be plugged into their proper sockets, putting the receiver in playing condition.

Tune accurately to some station between 1000 kc and 1500 kc. Then adjust the antenna compensating condenser, (the one to which the '36 RF tube grid clip is connected), to the point of maximum value. Do NOT touch the other trimmer condensers. If the receiver oscillates, a piece of sheet metal placed over the '36 tubes and touching the dividing shield. will stop it.

REPLACING THE CABLES

There are two cable drives; one within the control unit box; the other, the drive from the box to the condenser drum. To replace the condenser drum drive, proceed as follows:

1. Remove the chassis from its mounting case, loosen the pulley set screws and remove the pulley. Unsolder the broken cable from the pulley.

2. Loosen the condenser drum set screws.

3. Insert the new cable in the pulley and anchor it with solder in the same manner that the original cable was anchored.

4. Turn the Station Selector knob until the dial hits the "55" end stop.

5. Replace the pulley on its shaft, with one set screw facing up and the other facing the right side of the set. (See Fig.34). Wind the cable, which comes from the BOTTOM of the pulley by turning the knob for THREE turns in a counter clockwise direction. Then LOOP the cable around the pulley for one more turn, without turning the pulley.

6. With the condenser plates all the way out, turn the drum so that the slots face upward.

7. With a crochet needle, pull the cable under the drum and put the eye through the slot in the drum. (See Fig. 34). If necessary, turn the knob enough to permit the cable to reach the slot.

8. Loop the other cable around the pulley so that it comes off the top of the pulley. Then loop it around the condenser drum and into the other slot. (See Fig. 34).

9. Stretch the spring between the eyes of the two cables.

10. Turn the knob to the "55" end stop, fully mesh the condenser plates and tighten the drum set screws. Then tune in a station of known frequency of about 1000 kc. If the calibration is off, loosen the drum set screws and turn the knob until the dial reading corresponds to the station's frequency. Then tighten the drum set screws. Leave the station tuned in during the procedure in order to be sure that the drum does not turn.

COLONIAL RADIO CORP.

MODEL 106-B
Drive Cable data

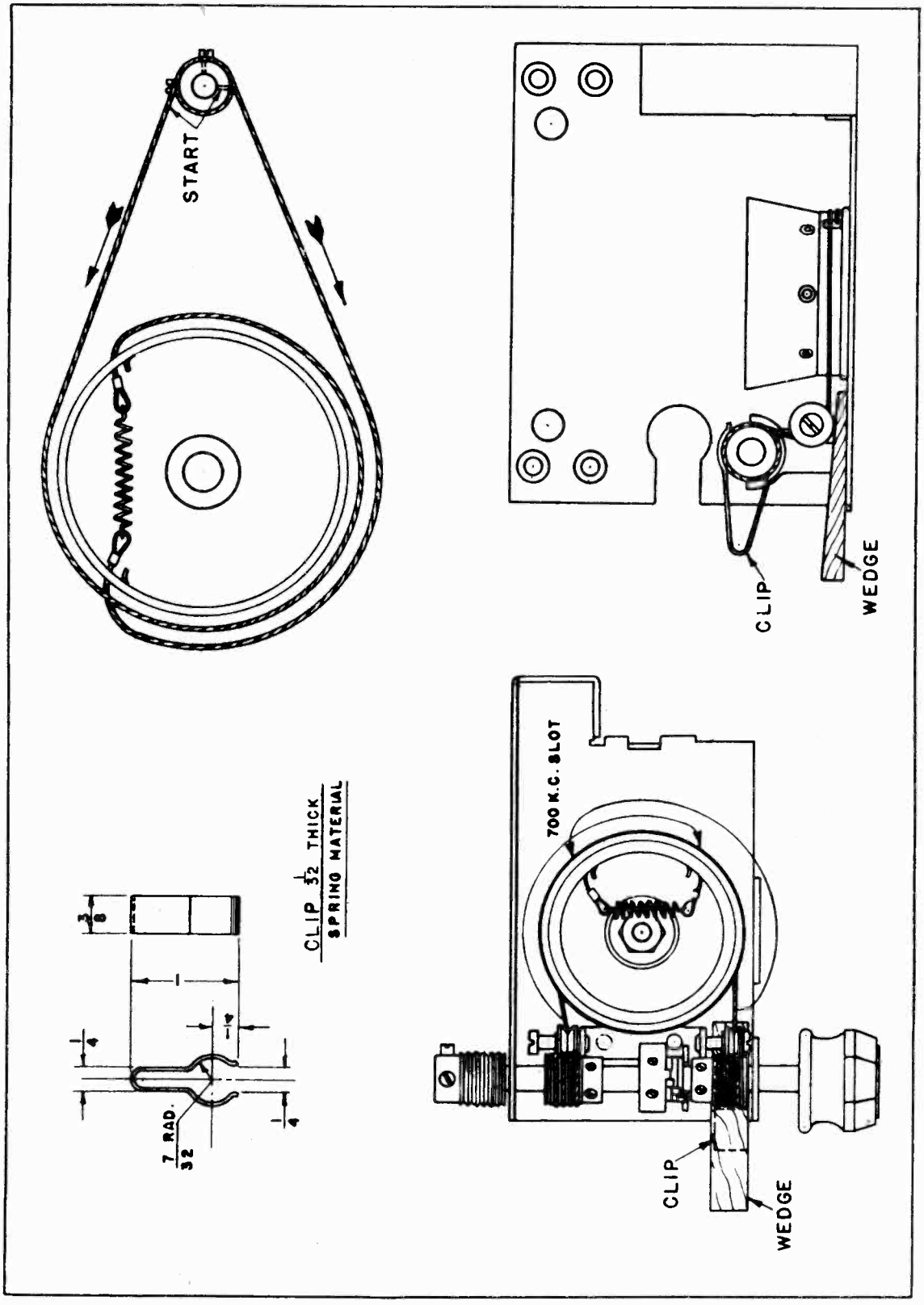


FIG. 34. REPLACING THE DRIVE CABLES

MODEL 106-B
Cable data

COLONIAL RADIO CORP.

TO REPLACE THE CABLES IN THE DRIVE UNIT CASE

1. Remove the chassis from its case; remove the knobs and the escutcheon.

2. Remove the three screws in the sides of the control unit case. Pull the lower half of the case down and around out of the way.

3. Loosen the set screws in the dial drive cables and in the stop collar. Pull the shaft either forward or backward far enough to slip off the pulley with the broken cable. If it is the rear pulley and the shaft must be pulled forward, it will be necessary to remove the condenser drum drive pulley. Wind string around the pulley so that the condenser drum cable will not slip off. Otherwise it will be necessary to go through the procedure, previously outlined, for replacing the condenser drum drive cable.

4. Insert the new cable in the pulley and anchor it with solder in the same manner that the original cable was anchored.

5. Slip the pulley and new cable back on the shaft. Be sure the shaft extends far enough back so that the condenser drum drive pulley can be fastened on.

6. Tighten the set screws in the pulley nearest the knob, leaving the other set screws loose.

7. Put a wedge shaped piece of wood under the front idler pulley so that the cable will not slip off of it. (See Fig. 34).

8. Put the clip shown in Fig. 34, which can be made of spring brass, over the pulley. See Fig.34 . Then wind the cable on the pulley by turning the knob.

9. The eye of the cable should be put into the slot which is at the "70" marking of the dial. Turn the dial drum far enough to take up the slack in the cable. Fasten the spring into the eye of the cable.

10. Clamp the shaft so that it can be turned, but will not turn of its own accord.

11. Loop the other cable around the dial drum (above the first cable) and into the other slot. Fasten its eye in the spring.

12. Then turn the pulley enough to take up the slack in the cable and to stretch the spring. Take care that the cables do not slip off of the drum. The job will be made easier if the stop collars are set so that the shaft will not turn as the cable is wound up.

13. After the slack is taken up and the spring stretched, tighten the pulley set screws.

14. Loosen the stop collar set screws and turn the knob to see that the cables ride freely. The cable which goes into the slot opposite the blank portion of the dial should be nearest the celluloid dial. The cable coming from the slot opposite the "70" marking of the dial should be in the center when the dial is turned to 55.

15. Turn the knob until the dial is one division past the last marking on the 1500 kc end of the scale. Then turn the stop collars counter clockwise as far as they will go and tighten the set screws in the stop collar.

16. Re-assemble the unit. The calibration can be re-set as described in the instructions for replacing the condenser drum drive cables.

REMEDIES FOR IGNITION INTERFERENCE

If a condition is met in which the installation of standard suppressor equipment still leaves objectionable noise, proceed as follows:

1. If any car wires or tubing pass through the same corner post as does the antenna lead-in, connect a 1 mfd. condenser from each of these wires at the point where it enters the corner post, to ground. The leads to condensers used for noise suppression must be kept as short as possible. Bond metal windshield tubing to the nearest ground with heavy copper braid or ribbon.

2. Bond the bulkhead to the nearest point on the motor.

3. Try an additional 1 mfd. condenser from ground to the BATTERY terminal of the ammeter.

4. Accelerate the engine and then cut off the ignition. If a whine is heard, decreasing in pitch as the engine slows down, interference comes from the generator. An additional 1 mfd. condenser from the AMMETER side of the generator cutout to the generator frame should completely eliminate this interference.

COLONIAL RADIO CORP.

MODEL 106-B
Interference data
General notes
Power Supply

5. Disconnect the high tension lead running from the coil to the center of the distributor. Disconnect it both at the coil end and at the distributor end. Turn the ignition switch on and turn the motor over with the hand crank. If clicks are heard as the distributor breaker makes and breaks contact, interference comes from this source. Additional capacity should NOT be put across the breaker points as it will interfere with the proper operation of the coil. (A condenser, connected across the points, is built into all distributors.) Rewire the entire low tension ignition system, using shielded low tension ignition cable which must be well grounded. Do not run the wiring along side of other wiring, but keep it separate, and if possible, along the car chassis channels.

6. If the trouble still persists, it may be necessary to use shielded high tension cable from the distributor to the coil. The shielding must be well grounded.

7. Very often the interference is radiated along dome light wiring, windshield tubing, oil lines running to the pressure gauge on the instrument panel, gasoline gauge lines, etc. When this is the case bi-passing or shielding the dome light wiring, grounding the shielding, will eliminate or minimize the trouble. Bonding the various pipes and cables to ground with heavy copper ribbon or braid will often effect much improvement.

8. In some cars the high tension coil or leads come very close to the motor side of the floor board. As a result, interference is picked up by the occupant's body and transferred to the car antenna. Trouble of this sort is manifested by noisy reception ONLY when a person is sitting in the car. It can be remedied by tacking a grounded metal plate or screen to the motor side of the floor board, or by placing a grounded screen between the floor matting and the floor board.

9. A forty or fifty turn choke, made of #14 wire wound on a 1/2" diameter form, connected in series with the ungrounded A lead, at the battery, often is helpful in eliminating noise. It is particularly worth trying for the new Ford 8's.

It should be understood that it practically never is necessary to apply ALL these remedies. How many of them are needed will depend on the particular car and installation. If it is remembered that the SOURCE of interfering noise is always a spark of some kind, and that the interference may be radiated along any metal conductor which is not grounded to the chassis of the car through extremely low resistance, the problem of interference elimination can be tackled intelligently and overcome.

GENERAL NOTES

To replace the pilot light, remove the two screws which hold the curved cover at the bottom of the control unit. The pilot light socket is fastened to this cover.

Intermittent reception or fading may be due to resistive contact of the fuse in its clips. This will be evidenced by heating of the fuse clips. Sandpaper the fuse and the clips and tighten the tension of the clips by squeezing them together.

Ignition interference will be reduced if the breaker points are adjusted to .01 inches. It is also helpful to build up the rotor arm with solder or to peen it so that it just misses touching (by about .001 inches) the electodes in the distributor cap.

Some spark plugs have suppressor resistors built into them. Such plugs usually are marked "radio". Additional suppressors should not be used lest the car performance be impaired.

Car antennas should be tested for grounds with a high resistance continuity meter connected from antenna to the body of the car. No reading should be had.

THE POWER SUPPLY

The power supply unit is shown schematically in Fig. 36 ; its location of parts illustration in Fig. 35 .

Repeated blowing of the fuse will be due either to a short or to sticking of the vibrator points. Do NOT attempt to repair the vibrator. Return it to your distributor or to the factory.

The relay should close when the key switch is turned on. It should be open when the switch is off.

The following chart will be helpful for making tests of the power supply unit. A continuity meter or ohmmeter may be used.

MODEL 106-B
Power Supply layout
Test data

COLONIAL RADIO CORP.

TEST	PROPER EFFECT	TROUBLE IF IMPROPER EFFECT IS HAD
From B+ to rectifier cathode	Reading	Open RF or filter choke
From B+ to B-(with + of meter connected to B+ of unit)	No reading (except charging current)	Shorted filter condenser
From B- to either plate	Reading	Open power transformer
From B- to side of .02 condenser which has been disconnected from transformer	No reading	Shorted condenser
From terminal #3 to #2	No reading	Relay contacts shorted
From terminal #1 to #3	Reading	Relay coil open
From B- to terminal #3	No reading	.5 mfd condenser shorted
From H to H (with 84 tube out of socket)	No reading	.25 mfd condenser shorted or vibrator contacts stuck.

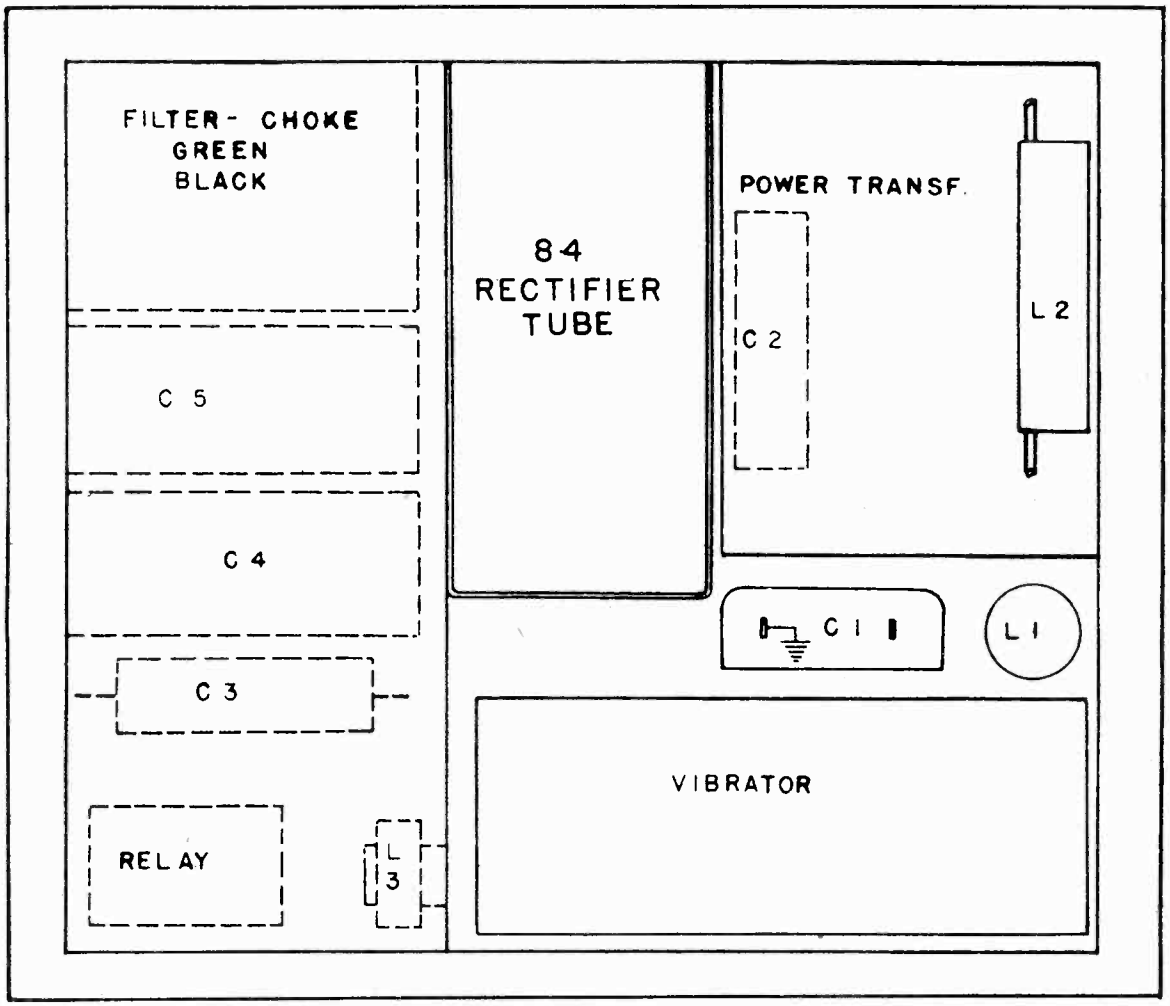


FIG. 35

COLONIAL RADIO CORP.

MODEL 106-B
Power Supply
Schematic

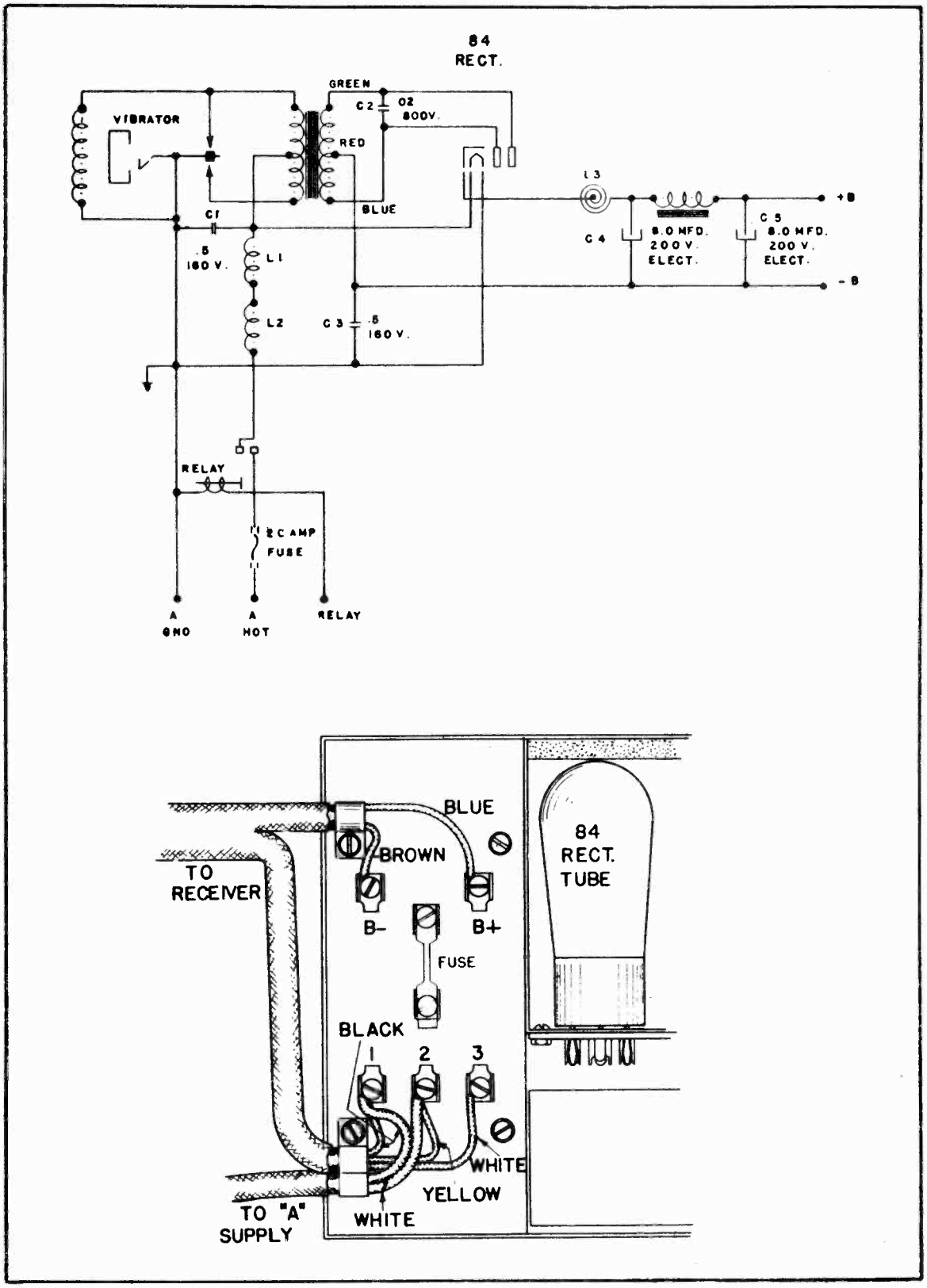
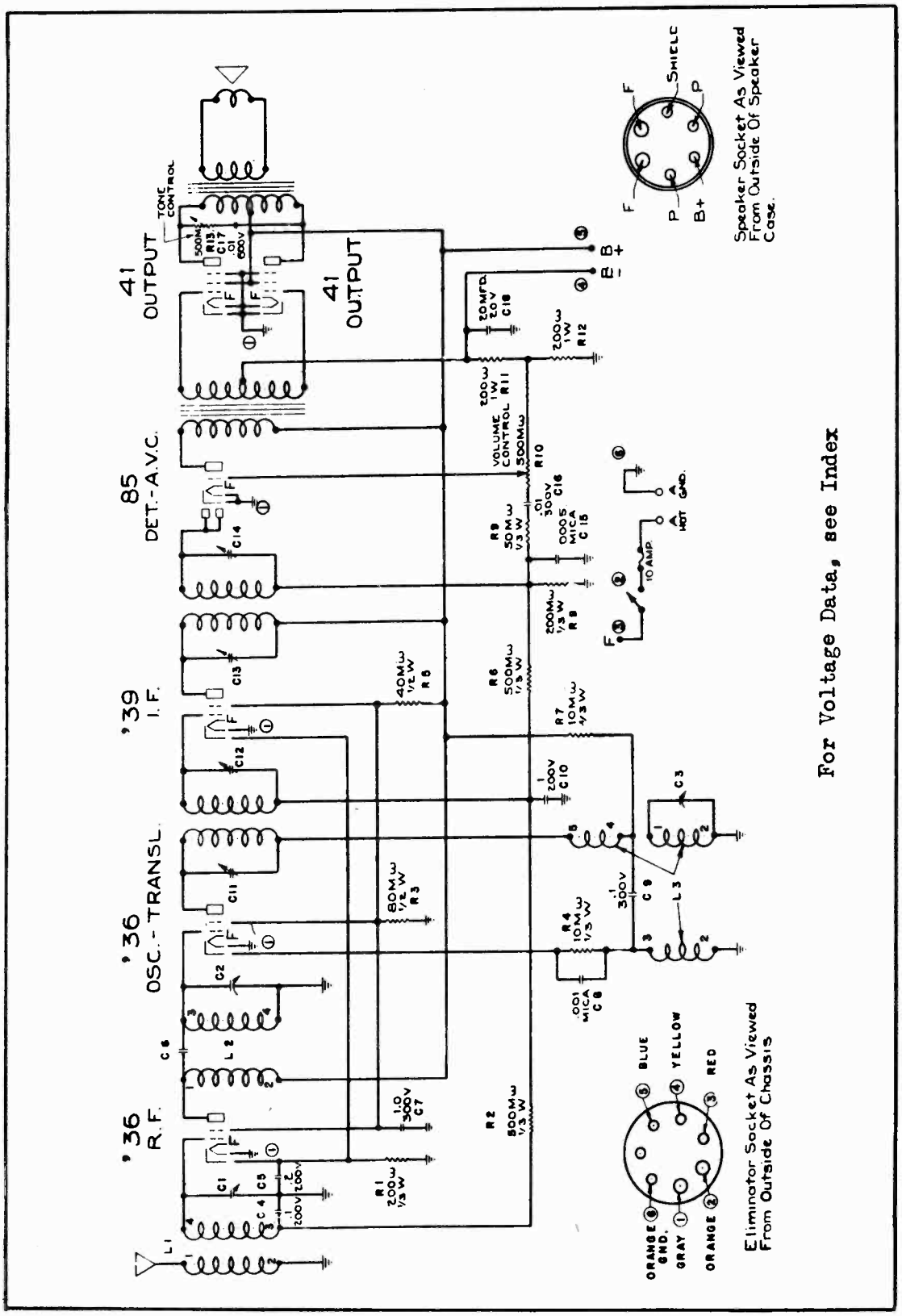


FIG. 36. SCHEMATIC - MODEL 106B POWER SUPPLY UNIT

MODEL 106-B
Schematic

COLONIAL RADIO CORP.



For Voltage Data, see Index

FIG. 37. SCHEMATIC - MODEL 106B

COLONIAL RADIO CORP.

MODEL 106-B
Socket layout
Parts location

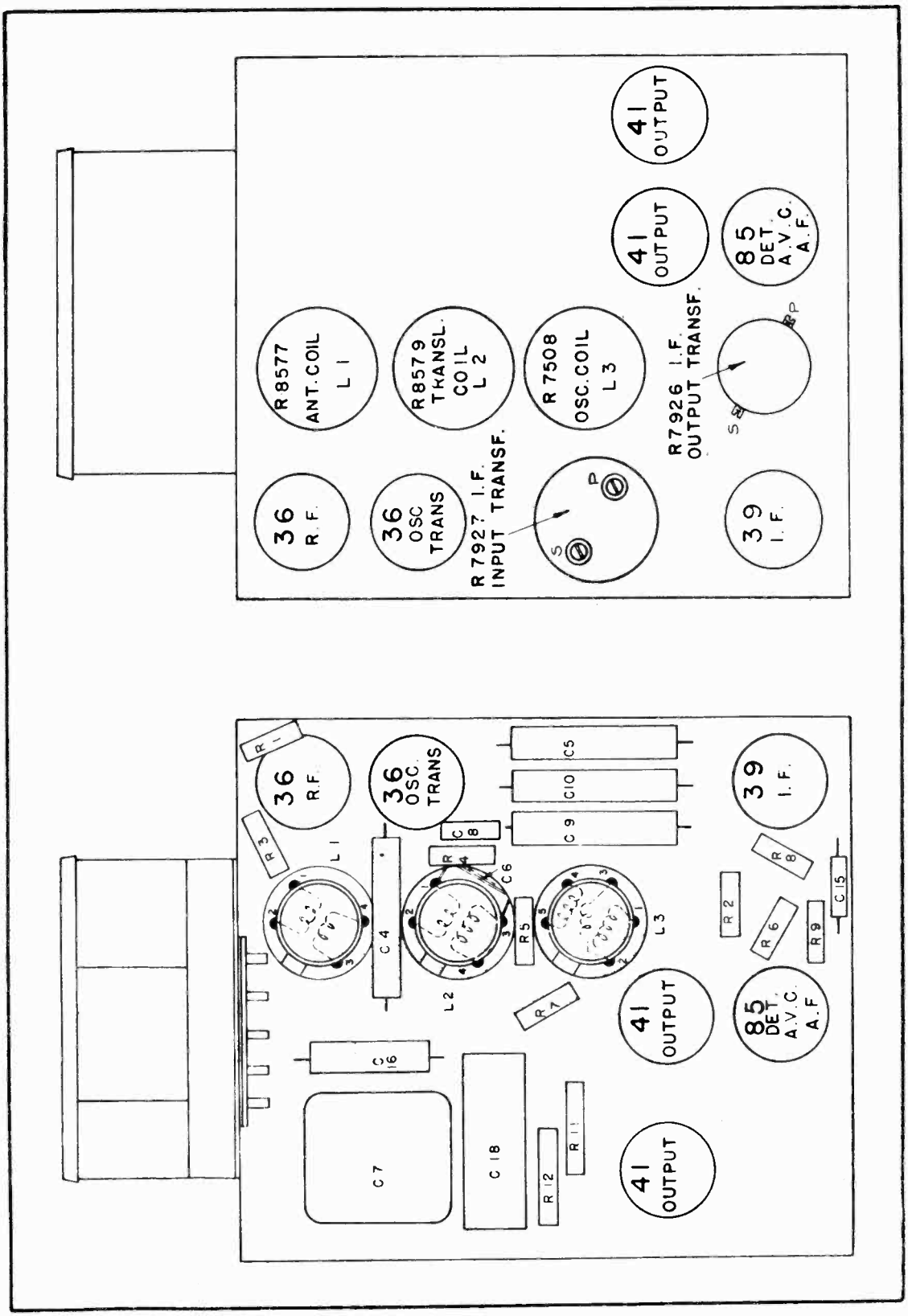


FIG. 38. SERVICE ILLUSTRATIONS - MODEL 106B

MODEL 106-B
Parts List

COLONIAL RADIO CORP.

REPLACEMENT PARTS LIST

PART NO.	DESCRIPTION
R-7901A	Board-Fuse
R-7902A	Bracket-Pulley
R-5330B	Cable-Drive, long
R-5330C	Cable-Drive, short
R-7957A	Cable-Chassis to speaker
R-6381	Clip-Screen grid
R-6381AA	Clip-Screen grid with shielded 13" lead
R-8577	Coil-Antenna
R-8577A	Coil-Antenna, complete with shield
R-7508	Coil-Oscillator
R-7508A	Coil-Oscillator, complete with shield
R-8579	Coil-Translator
R-8579A	Coil-Translator, complete with shield
R-8580	Condenser-Variable tuning
R-7917	Condenser-20 mfd. electrolytic
R-8030	Condenser-1 mfd. (suppressor)
R-7182	Condenser-1 mfd.
R-6380	Condenser-.2 mfd., 200v
R-8286	Condenser-.1 mfd., 200v
R-8581	Condenser-.1 mfd., 300v
R-8582	Condenser-.01 mfd., 300v
R-6759	Condenser-.001 mfd., mica
R-6760	Condenser-.0005 mfd. mica
R-7502A	Drum-Condenser drive
R-7907	Escutcheon
R-7688	Fuse-10 amp
R-7527	Grommet-Rubber
R-7692	Knob
R-2288	Lamp-Pilot
R-7514	Plug-Antenna
R-7588	Pulley-Idler
R-7589	Pulley-Dial drive (large)
R-7590	Pulley-Dial drive (small)
R-7589A	Pulley and cables (large)
R-7590A	Pulley and cables (small)
R1-8018	Resistor-Spark plug suppressor
R2-8018	Resistor-Distributor suppressor
R-7228	Resistor-500M ohm, 1/3 watt carbon
R-6638	Resistor-200M ohm, 1/3 watt carbon
R-8000	Resistor-80M ohm, 1/2 watt carbon
R-6637	Resistor-50M ohm, 1/3 watt carbon
R-6509	Resistor-40M ohm, 1/2 watt carbon
R-7587	Resistor-10M ohm, 1/3 watt carbon
R-7227	Resistor-200 ohm, 1/3 watt carbon
R-7273	Resistor-200 ohm, 1 watt carbon
R-8291A	Shield-Antenna
R-7550A	Shield-Coil
R-7923A	Shield-2nd I.F.
R-7922A	Shield-Tube
R-8253	Socket-5 prong
R-8092	Socket-6 prong
R-8587	Socket-7 prong
S-8467A	Speaker-Complete
S-7776A	Speaker-cone and voice coil assembly
S-7969	Speaker-field coil
R-8592	Speaker-tone control
R-7070	Speaker-tone control cond. .01 mfd. 600v
S-8472AC	Speaker-transformer
R-7715	Switch
R-7927	Transformer-I.F. input
R-7926	Transformer-I.F. output
R-7926A	Transformer-I.F. output complete with tuning condensers
R-7915A	Transformer-PP input

POWER SUPPLY PARTS

PART NO.	DESCRIPTION
R-5509	Board-Terminal (small)
UE-107	Board-Terminal for vibrator connections
UE-108	Board-Terminal (five connection and fuse)
UE-120	Cable-Elim. to chassis
UE-121	Cable-"A" battery
UE-110	Choke-Filter
UE-111	Choke-R.F., solid
UE-112	Choke-R.F., hollow
UE-115	Condenser-8 mfd. 200v
UE-118	Condenser-.5 mfd. 200v, cartridge
UE-117	Condenser-.5 mfd. 200v, metal case
UE-116	Condenser-.02 mfd. 800v
UE-136	Fuse-20amp
R-7963	Plug-7 prong
UE-113	Relay
UE-106	Transformer-Power
UE-104	Vibrator-complete

COLONIAL RADIO CORP.

MODEL 136
Circuit notes

SERVICE NOTES

MODEL 136

The Model 136 is a four tube AC-DC, tuned radio frequency receiver.

A 78 RF tube is impedance - capacity coupled to the tuned input of the 77 detector. The coupling capacity between the choke, L3 and the tuned coil, L4, consists of a single open ended turn of wire at the top of the coil, L3. The audio output of the 77 is fed to the 43 output pentode and then to the dynamic loudspeaker. A 2525 is used as a voltage doubling rectifier (on a.c.only).

Some of these receivers have a .001 mfd. antenna series condenser; others do not. Unless a series condenser is used, it is important that the antenna be not connected to any grounded object. To do so would result in severe hum since the chassis is above ground potential. A condenser may be added to those sets which do not have one built in.

THE VOLTAGE DOUBLER

The VOLTAGE DOUBLER circuit is shown in simplified schematic form in Fig. 51. It operates ONLY on AC(of any frequency).

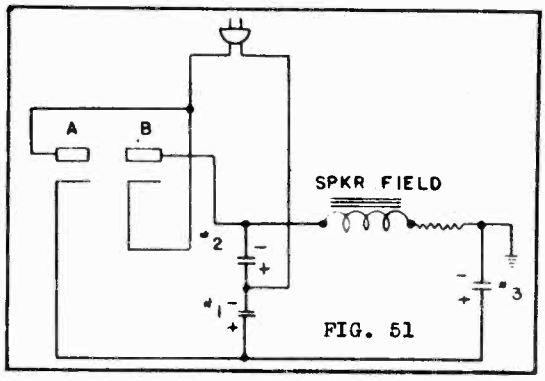


FIG. 51

At some instant plate "A" of the 2525 is positive. Current will flow from it to its cathode, through condenser #1, back to the negative side of the line. Condenser #1 is charged, then, to approximately the line voltage, with its polarity as indicated. A half cycle later the other side of the line becomes positive. Current flows through condenser #2, charging it, with polarity as shown, to plate "B", to its cathode and back to the negative side of the line. The result is that condensers #1 and #2 are charged with their potentials in series so that the total voltage across them is approximately double the applied line voltage. This doubled voltage is filtered by the loudspeaker field and condenser #3 and then fed to the plates and screens of the tubes.

OPERATION ON D. C.

The circuit existing when the AC-DC switch is in the "DC" position is shown in Fig. 52.

Current flows from plate "A", which must be connected to the POSITIVE side of the line, to its cathode, through the load resistance of the receiver (the plate and screen circuits), back to the negative side of the line. Condenser #3, in parallel with the load, provides a large capacity reservoir which filters out hum from the power supply. Plate "B" and condensers #1 and #2 are not used on D.C. and no voltage doubling occurs.

The polarity of the power cord plug is of no importance on a.c., but must be correct if the receiver is operated from d.c.

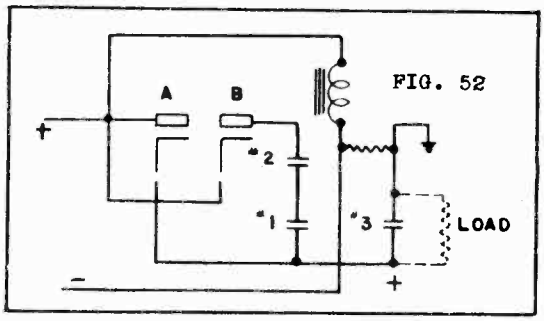


FIG. 52

MODEL 136
Voltage
Parts List

COLONIAL RADIO CORP.

VOLTAGE AND CURRENT CHART

MODEL 136

TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	GRID VOLTAGE	PLATE M. A.	SCREEN M. A.
78 - RF	110	70	-10	.7	.2
77 - Detector	30*	75	-3.5	.2	.1
43 - Output	105	120	*	30	6
25Z5 - Rect.	Doubled voltage = 200V.		Plate current = 36m.a.		

Speaker field voltage (a.c. supply) = 70 V.

* Indicates high series resistor.

Readings taken with volume control OFF.

Care should be used when taking readings with a set analyzer as the capacity of the cables may cause circuits to oscillate, giving rise to erratic readings. Usually, touching the finger to grid or plate is sufficient to stop oscillation. If an analyzer is not used, the voltage readings can be taken with a 1000 ohms per volt voltmeter, from cathode to the respective elements of each tube. Ordinarily, a 20% deviation from the chart value may be allowed.

If an analyzer is used to measure heater voltages, be sure a tube with heater intact is in the analyzer socket. Otherwise, the full line voltage will be across the heater prongs, possibly damaging the analyzer voltmeter.

The heaters of the tubes are in series so that if one burns out, none will light. The others will light when the burned out tube is replaced.

REPLACEMENT PARTS LIST

R-8228	Antenna
R-8308A	Board - Terminal (triple)
R-8297A	Board - Terminal (double)
R-9194	Cabinet
R-8047	Clip - Grid
R-8047A	Clip - Grid with 7" lead
R-9208	Coil - Antenna
R-8300	Coil - RF
R-8378	Coil - Choke, RF.
R-8296	Condenser - Variable tuning
R-9150	Condenser - Dry electrolytic
R-9156	Condenser - 5 mfd. electrolytic
R-8286	Condenser - .1 mfd. 200v.
R-7680	Condenser - .02 mfd. 300v.
R-8056	Condenser - .006 mfd. 600v
R-6759	Condenser - .001 mfd. mica
R-4592	Condenser - .00025 mfd. mica
R-9151	Control - Volume 15 M ohm
R-9152	Cord - 175 ohm, power
R-9205	Escutcheon - Station Selector
R-8663	Escutcheon - Station Selector
R-8970	Escutcheon - AC-DC
R-9183	Instruction leaflet
R-8664	Knob
R-8319	Pin - Escutcheon
R-6710	Resistor - 400M ohms, 1/3 watt carbon
R-5819	Resistor - 100M ohms, 1/2 watt carbon
R-7291	Resistor - 15M ohms, 1/2 watt carbon
R-7587	Resistor - 10M ohms, 1/3 watt carbon
R-8252	Resistor - 350 Ohms, 1 watt flexible
R-8562	Resistor - 400 ohms, 3 watt flexible
R-8395	Shield - Tube, bottom
R-8396	Shield - Tube, top
R-8523	Shield - Tube, top
R-8092	Socket - 6 prong
S-9157	Speaker
S-8674	Speaker hum bucking coil
S-8643A	Speaker cone & voice coil
S-8649	Speaker field coil
S-8640	Speaker clamping ring
S-8641	Speaker clamping ring
S-8651A	Speaker transformer
R-9026	Switch - AC-DC.

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MODEL 136
Schematic

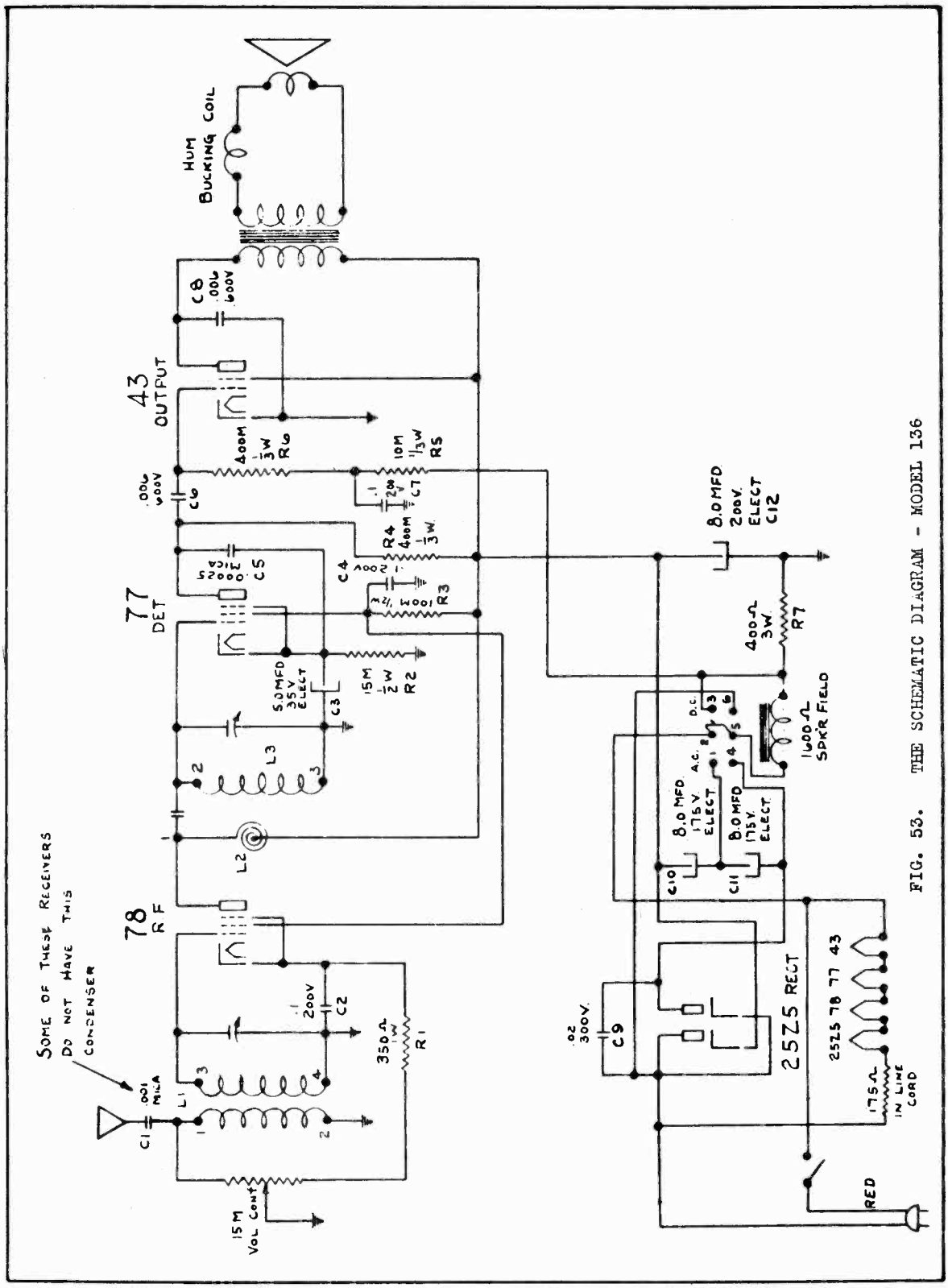


FIG. 53. THE SCHEMATIC DIAGRAM - MODEL 136

MODEL 136
Socket layout
Parts location

COLONIAL RADIO CORP.

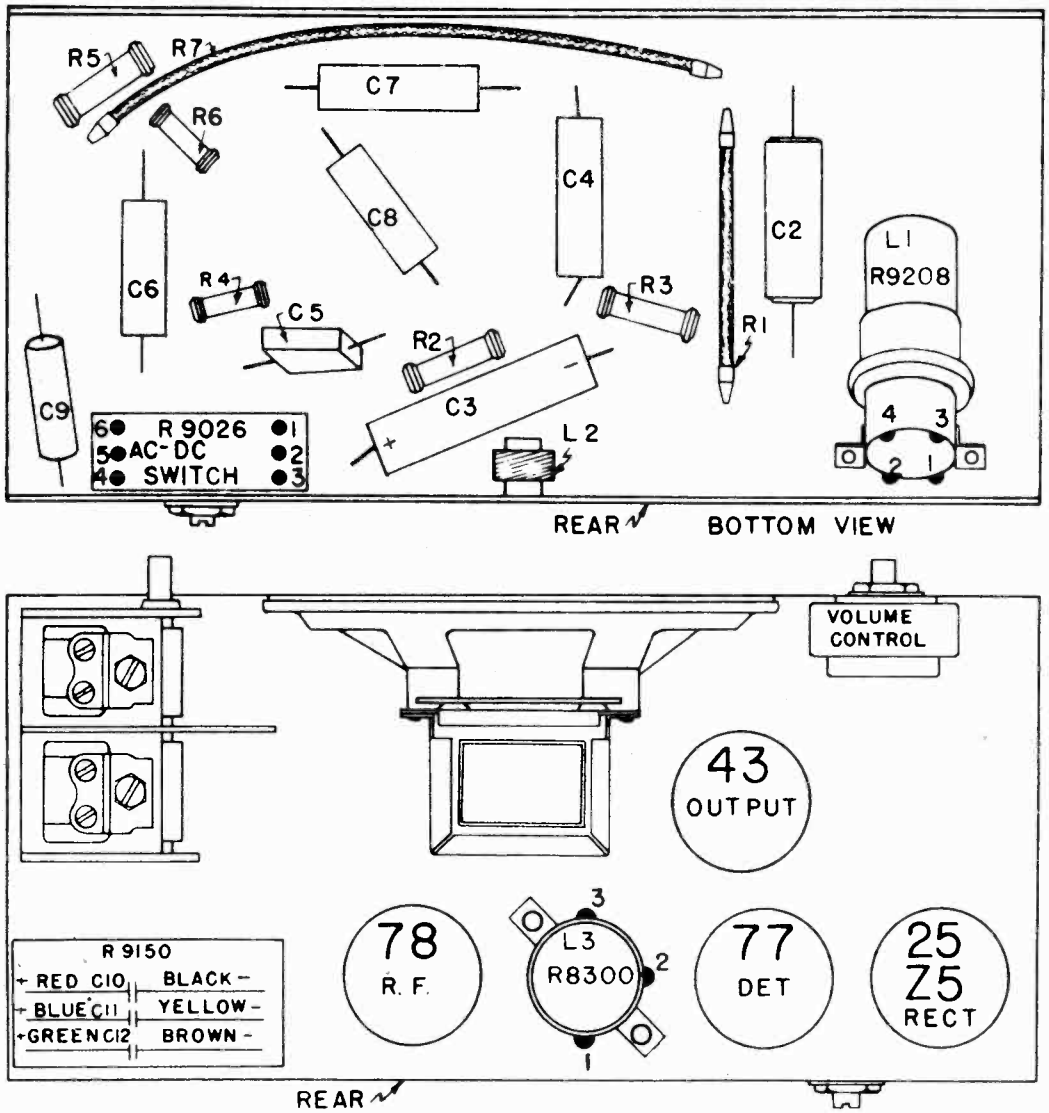


FIG. 54. SERVICE ILLUSTRATIONS - MODEL 136

COLONIAL RADIO CORP.

MODEL 150
Notes

SERVICE NOTES

MODEL 150

The COLONIAL Model 150 is a completely self contained four tube superheterodyne automobile receiver.

A 6A7 tube combines the functions of oscillator and translator (1st detector). The 480 kc IF signal it creates in its plate circuit is coupled to the 78 IF tube and then to the 75 AVC - Detector - AF stage. A 41 output pentode feeds the dynamic speaker.

Because the 6A7 performs both as oscillator and translator and because the 75 tube fills three functions, the circuit is the equivalent of a seven tube one, were a separate tube used for each function.

A plug-in type mechanical rectifier and vibrator is used in the power supply. It is replaced as easily as a tube. Do NOT attempt to make repairs on it.

Two of the rectifier socket prongs are fitted with terminals for matching the polarity of the receiver to that of the car battery. Their proper connections are fully described in the instruction book which comes with each receiver. Briefly, the red lead is connected to the terminal nearest the side of the chassis when the receiver leaves the factory. This connection is proper ONLY if the grounded terminal of the car battery is the NEGATIVE one. If the POSITIVE terminal is the grounded one, the positions of the red and the green leads must be interchanged so that the GREEN lead is connected to the terminal nearest the side of the Chassis. Damage may be done to the electrolytic condensers if the receiver is connected for any time with incorrect polarity.

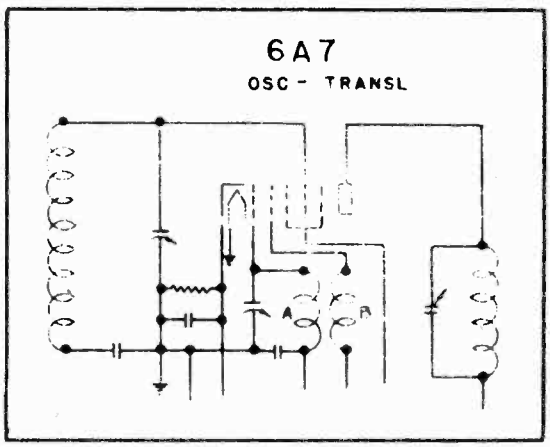


FIG. 39.

THE 6A7 OSCILLATOR - TRANSLATOR

The 6A7 Oscillator Translator circuit is shown schematically in Fig. 39. Grid #1 can be thought of as the control grid of an ordinary triode, and grid #2 as the plate. Coil A, tuned by the oscillator section of the ganged condenser, becomes the grid coil of the usual triode oscillator, and coil B the feedback or plate coil. Grid #4 may be considered as the control grid of an ordinary screen grid detector. Grids #3 and #5 comprise the screen. Accordingly, the functions of oscillator and of translator (or first detector) are occuring in the one tube. There remains only the task of combining the oscillator signal and the incoming broadcast signal in order to create the IF signal. Although grids #1 and #2 act as the grid and plate, respectively, of a triode, at the same time they affect the flow of electrons to the plate of the 6A7 inasmuch as they are in the path between cathode and plate. The 6A7 plate current then is controlled both by grids #4 and #3 and #5, which is the translator, and grids #1 and #2 which is the oscillator. Accordingly, the plate circuit contains the combination of the oscillator and broadcast signals, or the IF signal.

THE AVC - DETECTOR - AF CIRCUIT

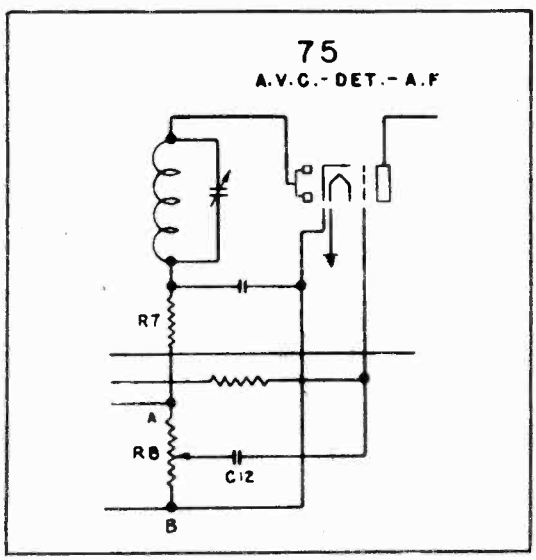


FIG. 40.

The AVC - Detector - AF circuit is shown schematically in Fig.40. The signal at the IF output transformer secondary is impressed across the diode part of the 75 tube in series with R7 and R8,

MODEL 150
Notes, Voltage
MODEL 106-B
Voltage

COLONIAL RADIO CORP.

the volume control. Since the current flows from plate to cathode, point (A) is negative with respect to point (B). Because the cathodes of the 6A7 and 78 tubes are connected to point (B) and their grid returns to point (A), the negative bias, created by the signal, across R8 is impressed on the control grids of these tubes. Any increase in signal strength increases the drop across R8, increases the negative grid bias on the 6A7 and 78, and so decreases their amplification. Increases in signal strength are offset by decreased amplification so that the input to the 75 tube tends to remain at a constant value.

The AF component of the voltage across R8 is picked off by the moving arm of the volume control and fed through C12 to the control grid of the triode portion of the 75 tube where it is amplified and passed on to the 41 output tube.

The power transformer is SOLDERED into the case which contains it and the Elkonode socket and associated apparatus. It is necessary to do this to secure the perfect electrical grounding needed for complete elimination of noise from the power supply. Should the power transformer need replacement, the entire case assembly should be ordered. (Part #R-9036 C). It is removed by taking out the four screws marked (A) in Fig.41 and unsoldering the necessary leads.

TUBE VOLTAGE AND CURRENT CHART - MODEL 150

TUBE	PLATE VOLTS	SCREEN VOLTS	GRID VOLTS	PLATE M.A.	SCREEN M.A.
78 - IF	200	120	*	2	.8
75 - AVC-Det-AF	145		*	.3	
41 - Output	175	190	-2.5*	13	1.5
6A7- Osc-Transl	Ep=200v; Eg #1=-6.5v; Eg #2=205v; Eg #3&5=115v; Eg #4=*; Ip=4ma; Ig #2=2.5ma; Ig #3&5=1.8ma				

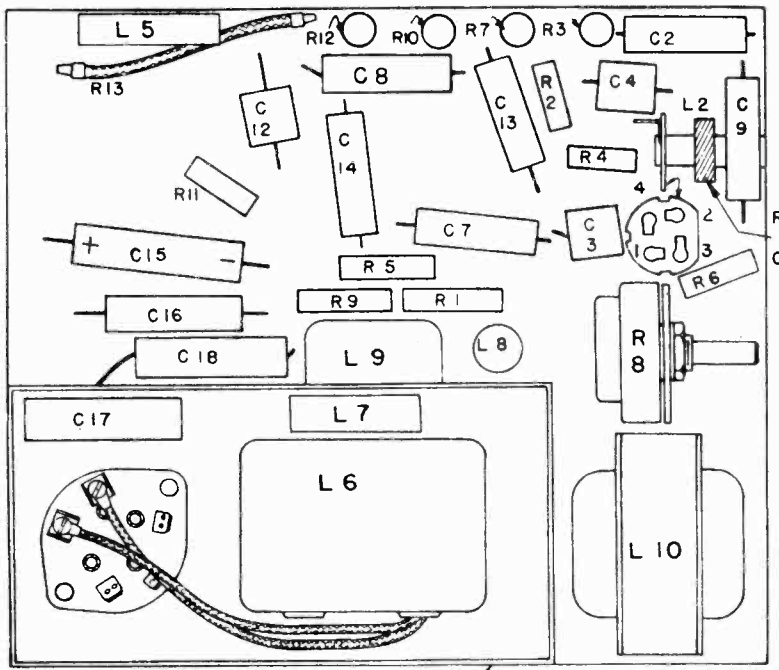
* - Indicates high series resistor.
Readings taken with antenna disconnected and no signal received. Care should be used if readings are taken with an analyzer as the capacity of the cables may cause circuits to oscillate, giving rise to erratic readings. Usually, touching the finger to grid or plate will stop oscillation. If an analyzer is not used, voltage readings may be taken from the cathode to the respective element of each tube.

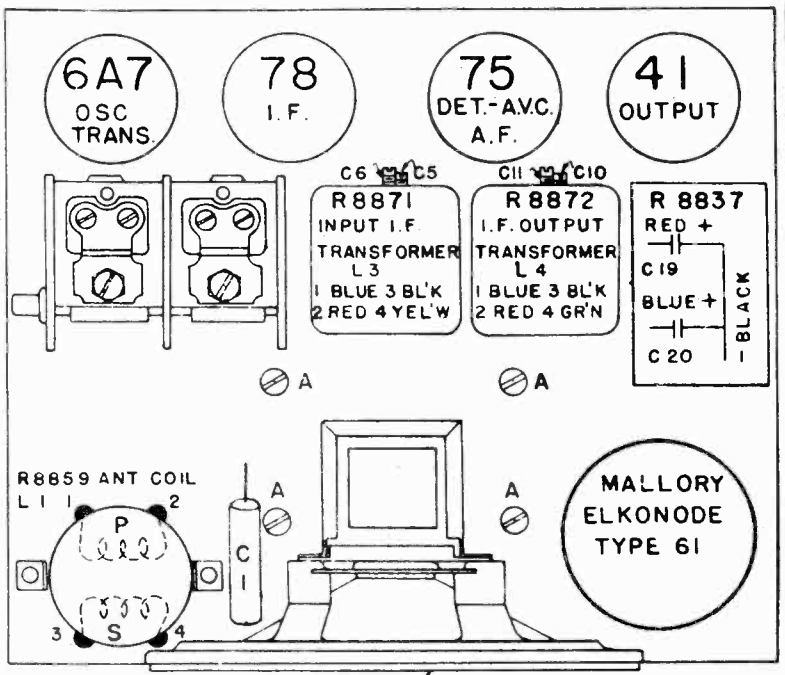
TUBE VOLTAGE AND CURRENT CHART - MODEL 106B

TUBE	PLATE VOLTS	SCREEN VOLTS	GRID VOLTS	PLATE M.A.	SCREEN M.A.
'36 - RF	160	65	*	2.5	.6
'36 - Osc-Transl	150	65	-3.75	.4 to 2(a)	0 to .5(a)
'39 - IF	160	65	*	1.3	.6
41 - Output	160	160	-15	8	1.25
85 - AVC-Det-AF	155		-7.5 volume control off		

* - High series resistance.
(a) - Dependent upon station selector setting.
Total current drawn by receiver, power supply and speaker - 5.4 amps. Total plate current - 40m.a. (180 volts) with 6.3 volt input.

R-9047	Resistor - 750 ohm pigtail
R-7228	Resistor - 500M ohm,1/3 watt carbon
R-7586	Resistor - 100M ohm,1/3 watt carbon
R-6637	Resistor - 50M ohm, 1/3 watt carbon
R-6635	Resistor - 25M ohm, 1/3 watt carbon
R-6640	Resistor - 20M ohm, 1/3 watt carbon
R-6636	Resistor - 1M ohm, 1/3 watt carbon
R-8922	Resistor -100 ohm, 1/3 watt carbon





R-8831	Condenser - Variable tuning
R-8837	Condenser - Dry electrolytic
R-9144	Condenser - 10 Mfd. electrolytic
R-9032	Condenser - .5 Mfd. 160 volt
R-9227	Condenser - .2 Mfd. 200 volt
R-8931	Condenser - .1 Mfd. 400 volt
R-8286	Condenser - .1 Mfd. 200 volt
R-8920	Condenser -.05 Mfd. 200 volt
R-9145	Condenser -.05 Mfd. 600 volt
R-8921	Condenser -.01 Mfd. 200 volt
R-8930	Condenser -.006 Mfd. 800 volt
R-7244	Condenser -.006 Mfd. 600 volt
R-6759	Condenser -.001 Mfd. Mica
R-6760	Condenser - .0005 Mfd. mica
R-4592	Condenser - .00025 Mfd. Mica
R-8030	Condenser - 1 Mfd. noise suppressor

FIG. 41. SERVICE ILLUSTRATIONS - MODEL 150

MODEL 150
Schematic

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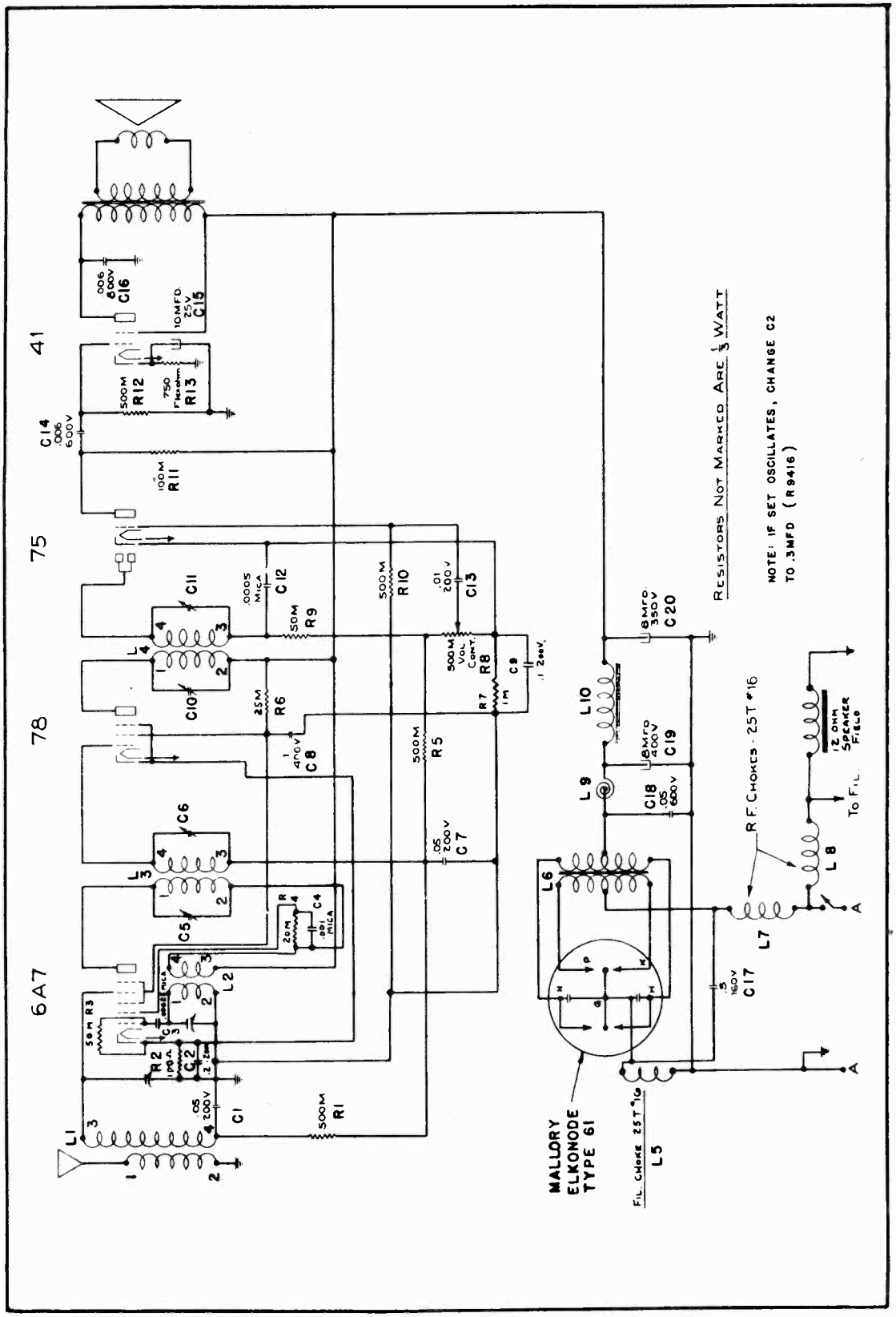


FIG. 42. SCHEMATIC DIAGRAM - MODEL 150

COLONIAL RADIO CORP.

MODEL 250,279,300, 301,500
Notes

SERVICE NOTES

MODELS 250-279-300

Also 301 and 500

INTRODUCTION

The COLONIAL Models 250, 279 and 300 receivers are five tube superheterodyne compacts embodying the most advanced of design features. They can be operated from direct current or from alternating current of any frequency. The rectifier tube, the newly developed 25Z5, is so connected that it doubles the voltage supplied by the A.C. line. Because the 6A7 tube is used as a combination oscillator-translator and because the 6B7 provides I F amplification as well as AVC action, the circuit is the equivalent of a seven tube one, were a separate tube used for each function. Highly efficient litz wound coils insure the keenest selectivity and great sensitivity. A geared reduction drive, with springs and split gears to prevent backlash and a dial calibrated in kilocycles make for easy tuning. Except in back, the chassis is entirely steel enclosed. This, together with the fact that the series heater resistor is an integral part of the line cord (insted of being contained in the chassis), prevents overheating and destruction of the cabinet. The speaker is an efficient moving coil dynamic.

THE I.F. - A.V.C. CIRCUIT

The I.F.-A.V.C. circuit is shown in Fig. 17. A portion of the I.F. signal voltage is applied from the pentode plate of the 6B7 through the 15 mmfd. condenser to the diode plates of the 6B7. The diode current resulting flows through the 100M and 400M ohm resistors, creating a voltage drop across them. Since the diode current flows from plate to cathode, the direction of the current through the resistors is from point "A" to point "B", or, point "A" is positive with respect to point "B". Since the cathode of the 6A7 is connected to point "A" and the grid return is connected to point "B", the translator grid of the 6A7 is biased negatively by the amount of the voltage drop across the 100M and 400M ohm resistors. The amount of this drop is propoptional to the strength of the I.F. signal. A portion of this drop (that across the 400M ohm resistor) is also applied to the grid of the 6B7. A strong signal increases the drop, the negative grid bias on these tubes, and so reduces their amplification. The amplification, then, varies inversely as the strength of the incoming signal so that the signal voltage at the I.F. output tends to remain constant. The residual bias for the 6A7 is furnished by the 50 ohm resistor in its cathode circuit. The 700 ohm resistor supplies residual bias for the 6B7.

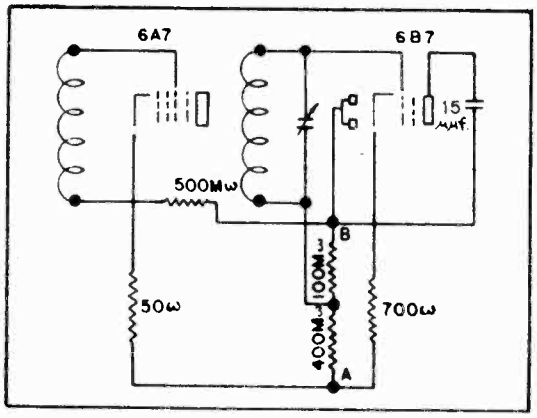


FIG. 17

The A.V.C. action can be rendered inoperative, when peaking the I.F. transformers, by unsoldering one side of the 15 mmfd. coupling condenser. It is mounted across the 6B7 socket. (C7 in illustrations).

The four tuning condenser adjustments for the I.F. transformers are accessible from the front of the chassis and are illustrated in Fig. 18. The I.F. frequency is 175 kc.

GENERAL NOTES

The loudspeaker can be removed for replacement by taking off the 6B7 tube shield and removing the three speaker mounting screws. Be certain that the speaker leads color code, indicated in the schematic, is followed. Improper connection will cause excessive hum due to the hum bucking coil's increasing hum instead of cancelling it out.

Increased pickup can be had by clipping the antenna lead to some metal object having a large surface. However, clipping it to grounded objects, (such as water or steam piping systems) may result in increased noise and hum.

Receivers which are rubber stamped "128 A" on the chassis just above condenser C11 are wired as shown in Schematic "A". Those stamped "128 B" are wired as in Schematic "B".

MODEL 250,279,300,
301,500
Voltage, Tube data

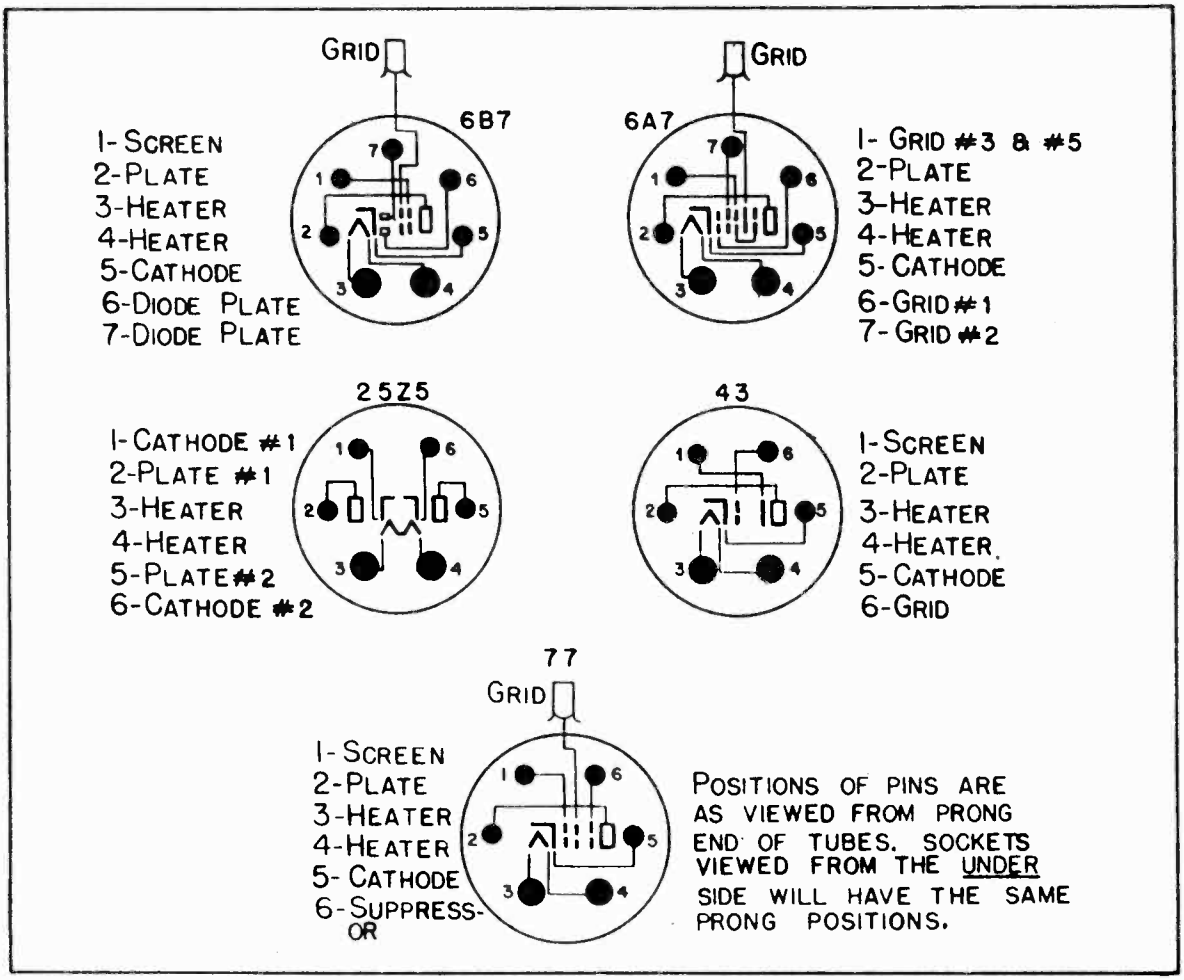
COLONIAL RADIO CORP.

TUBE VOLTAGE AND CURRENT CHART

MODELS 250 - 279 - 300

TUBE	PLATE VOLTS	SCREEN VOLTS	GRID VOLTS	PLATE M.A.	SCREEN M.A.
6B7 - IF-AVC	110	55	-7*	.4	.2
77 - Detector	50	22	-1.5	.1	.04
43 - Output	100	120	-10*	26	5
6A7 - Osc-Transl	Ep=105v; Eg#1=-5v; Eg#2=105v; Eg#3&5=55v; Eg#4=*; Ip=2ma Ig#2=1.3ma; Ig#3&5=1.2ma				
25Z5- Rectifier	Plate Current = 40m.a. per plate				

Speaker Field Voltage = 70v.
* - Indicates high series resistor.
Tube heaters are in series so that if one burns out, none will light. These measurements were made with a 500 volt, 1000 ohms per volt meter. Power supply 118 volts A.C. Measurements made with set detuned, and speaker field hot. Care should be used when taking readings with a set analyzer as the capacity of the cables may cause circuits to oscillate, giving rise to erratic readings. Usually, touching the finger to grid or plate is sufficient to stop oscillation.



COLONIAL RADIO CORP.

MODEL 250,279,300, 301,500
Parts location

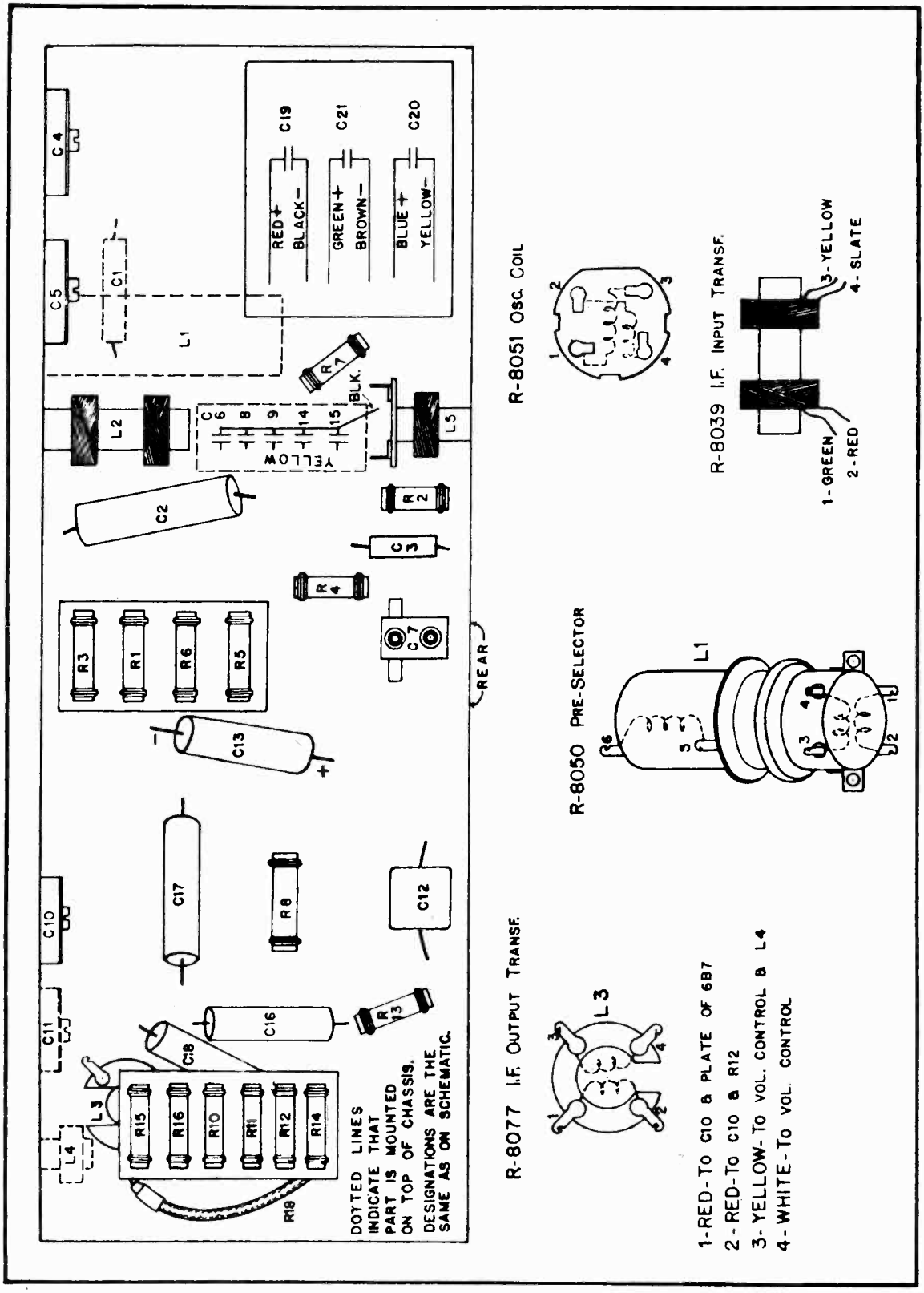


FIG. 18. ILLUSTRATION FOR LOCATION OF PARTS AND COIL CONTINUITY CHECKING.

MODEL 250,279,300,
301,500
Schematic "A"

COLONIAL RADIO CORP.

THE CHASSIS OF MODELS 301 AND 500 IS THE SAME AS THAT OF MODELS 250-300,

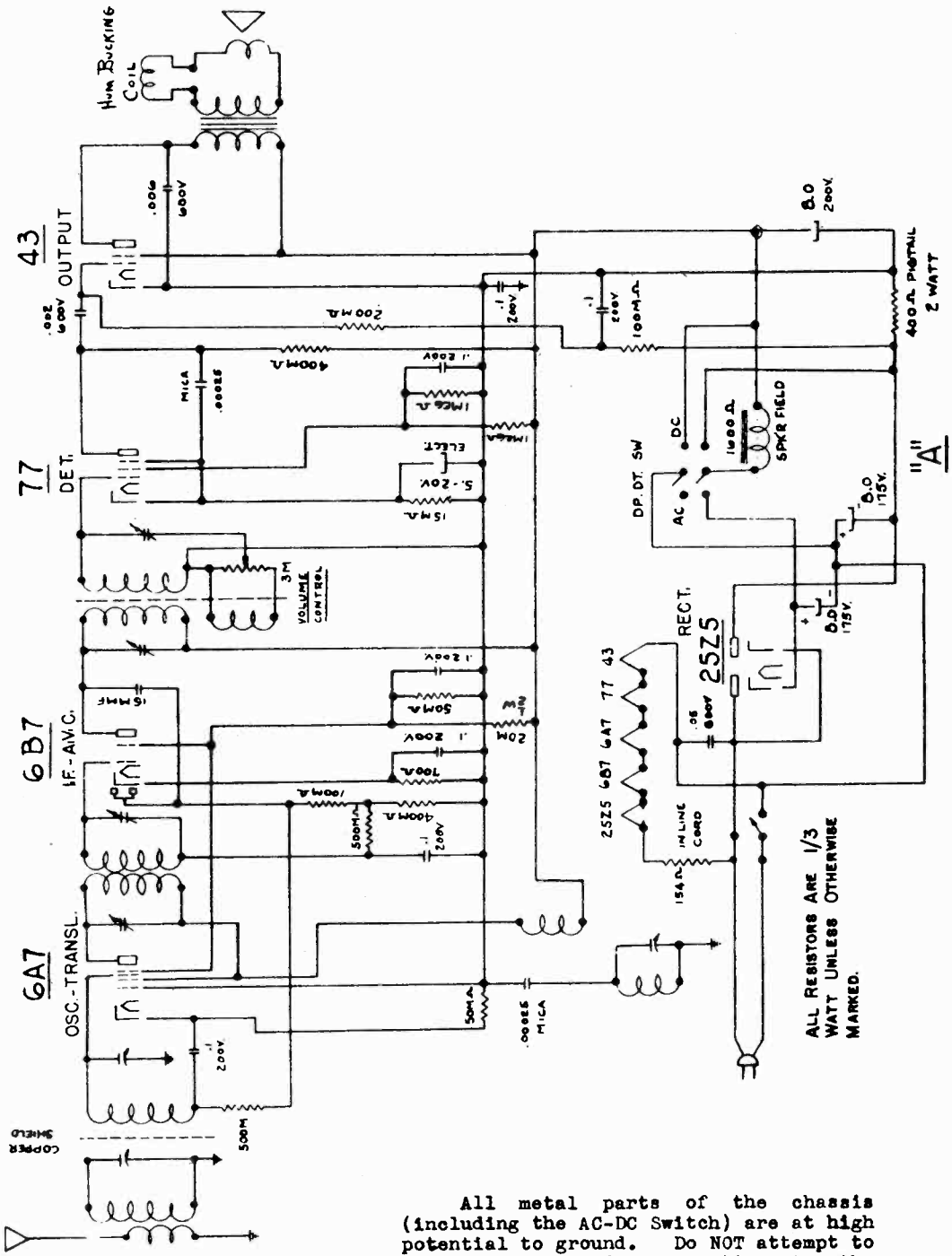


FIG. 19. 128 "A" SCHEMATIC.

All metal parts of the chassis (including the AC-DC Switch) are at high potential to ground. Do NOT attempt to attach a ground connection to the chassis. Do NOT touch the chassis while the line cord is plugged into an outlet.

COLONIAL RADIO CORP.

MODEL 250,279,300, 301,500
Schematic "B"

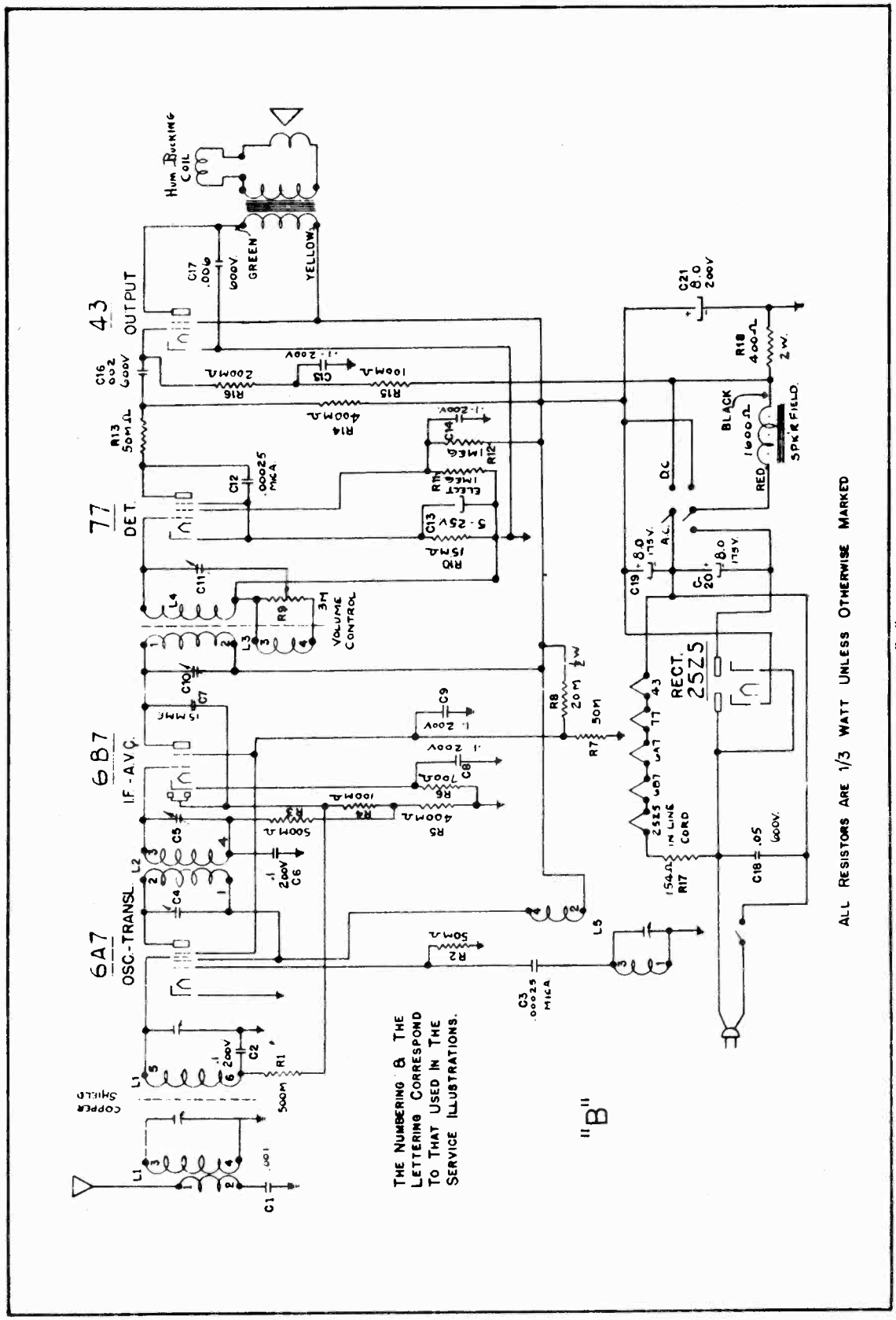


FIG. 20. 128 "B" SCHEMATIC.

MODEL 250,279,300,
301,500
Parts List

COLONIAL RADIO CORP.

REPLACEMENT PARTS

MODELS 250 - 279 - 300

Also 301 and 500

PART NO.	DESCRIPTION
R-8044A	Board-Resistor, 8 terminal
R-8043A	Board-Resistor,10 terminal
R-5509A	Board-Terminal
R-8096	Cabinet-Model 250
R-8035	Cabinet-Model 279
R-8036	Cabinet-Model 300
R-7621	Card-Guarantee
R-8048	Clip-Antenna
R-8047	Clip-Screen Grid
R-8047C	Clip-Screen Grid & 8" lead
R-8051	Coil-Oscillator
R-8095	Coil- Choke, detector input
R-8050	Coil-Pre-selector
R-8053	Condenser-Electrolytic, dry, triple
R-8038	Condenser-I.F. tuning
R-8052	Condenser-Variable tuning
R-8042	Condenser-15 mmfd. AVC
R-4592	Condenser-.00025 mfd. mica
R-6759	Condenser-.001 mfd. mica
R-8055	Condenser-.002 mfd. 600v.
R-8056	Condenser-.006 mfd. 600v.
R-8057	Condenser-.05 mfd. 600v.
R-6444	Condenser-.1 mfd. 200v.
R-8054	Condenser-.1 mfd. 200v. (5 in block)
R-8058	Condenser 5mfd. electrolytic
R-8059	Control-Volume, 3M ohms
R-8060	Cord-Extension, brown
R-8090	Cord-Extension, black
R-8080	Decalcomania-Name plate Models 250 & 279
R-8084	Decalcomania-Name plate Model 300
R-8082	Escutcheon-Station Selector Models 250 & 279
R-8086	Escutcheon-Station Selector Model 300
R-8081	Escutcheon-Volume control Models 250 & 279
R-8085	Escutcheon- Volume control Model 300
R-8202	Feet-Cabinet, Model 300
R-8079	Instruction leaflet
R-8083	Knob-Models 250 & 279
R-8087	Knob-Model 300
R-954	Nut-4/36 100 for
R-951	Nut-6/32 100 for
R-8037	Resistor-700 ohm 1/3 watt carbon
R-6708	Resistor-15M ohm 1/3 watt carbon
R-5821	Resistor-20M ohm 1/2 watt carbon
R-6637	Resistor-50M ohm 1/3 watt carbon
R-7586	Resistor-100M ohm 1/3 watt carbon
R-6638	Resistor-200M ohm 1/3 watt carbon
R-6710	Resistor-400M ohm 1/3 watt carbon
R-7228	Resistor-500M ohm 1/3 watt carbon
R-7585	Resistor-1 megohm 1/3 watt carbon
R-8066	Resistor 400 ohm pigtail
R-661	Screw-4/36x1/4" R.H.
R-7350	Screw-4/36x5/16"R.H.
R-8463	Screw-4/36x5/16
RS-177	Screw-4/36x3/8" R.H.
R-8068	Screw-#4x1/2" wood
R-1738	Screw-6/32x1/4" R.H.
R-1737	Screw-6/32x1/4" F.H.
R-2159	Screw-6/32x3/8" F.H.
R-655	Screw-6/32x3/8" R.H.
R-662	Screw-6/32x1/2" F.H.
R-650	Screw-6/32x5/8" R.H.
R-8067	Screw-6/32x1-1/8"F.H.
R-6910	Screw-6/32x1-1/2"R.H.
R-8069	Screw-#6x1/2" wood
R-4334	Screw-10/32x1/4"R.H.
R-4866	Screw-10/32x1/2"R.H.
R-5409	Screw-10/32x3/4"R.H.
R-8040	Shield-Tube
R-8092	Socket-6 prong
R-8072	Socket-7 prong
R-2414	Spacer-I.F. tuning condenser
R-4374	Spacer-Resistor board
S-8093	Speaker-1600 ohm
R-8074	Sticker-License and tube, Model 250
R-8075	Sticker-License and tube, Model 279
R-8089	Sticker-License and tube, Model 300
R-8076	Switch-"AC-DC"
R-7627	Tag-"DISTRIBUTED BY GRAYBAR" 10 for
R-8039	Transformer-I.F. input
R-8077	Transformer-I.F. output
R-4794	Washer-Insulating, volume control
R-4330	Washer-Lock, #4
R-4327	Washer-Lock, #6
R-4328	Washer-Lock, #8
R-4329	Washer-Lock, #10
R-7471	Washer-Shakeproof, top mounting plate
R-6614	Washer-Shakeproof, volume control

COLONIAL RADIO CORP.

MODEL 250 AC, 279 AC, 300 AC, 301 AC, 250-300 AC

Notes

SERVICE NOTES

MODELS 250AC-279AC-300AC & 250-300

Two models of the Colonial 250-279-300 AC-DC receivers have been put out, as have two models of the corresponding AC receivers. One model covers only the broadcast band. The range of the other has been extended to 2500 kc to include Police Broadcasts. They can be told apart by their frequency range as well as by their tube complement.

The broadcast range Model 250-279-300 AC-DC was described on pages 41 to 47 of the Service Manual. The companion model for AC operation is shown schematically in Fig. 22, and its Location of Parts diagram in Fig. 23.

Except that it uses a power transformer instead of a voltage doubler circuit with series tube heaters, the circuit is similar to that of the AC-DC model. It uses the same IF-AVC circuit shown on page 42 for the AC-DC model.

To render the AVC action ineffective, when peaking the IF stage, adjust the test oscillator to as low an output as possible -- just enough to get an audible signal or readable deflection on the output meter. The volume control of the receiver should be on full. If the oscillator is not equipped with an attenuator, its output lead should be connected in series with a very small capacity in order to reduce its output. Twisting two pieces of wire, insulated from each other, for a few inches will serve.

THE EXTENDED RANGE MODELS

The extended range Model 250-300 AC-DC is shown schematically in Fig. 24; its location of parts diagram in Fig. 25. Its companion AC model is shown in Figs. 26 and 27.

The voltage doubler circuit is the same as that shown on page 41.

The 6A7 tube acts both as oscillator and translator, producing a 175 kc signal which is fed to the 78 IF stage.

The type 75 tube acts as a diode detector, AVC, and 1st audio tube. It is shown schematically in Fig. 28.

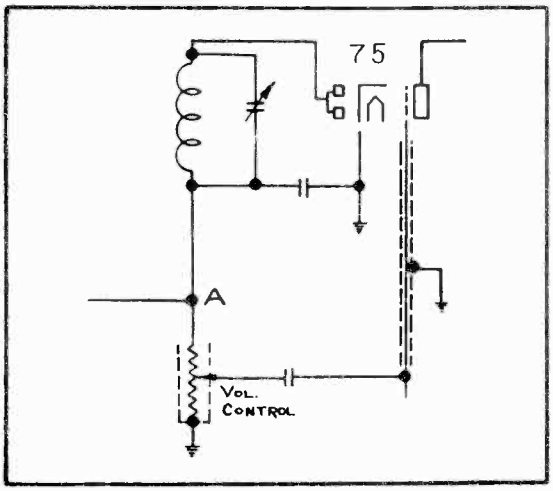


FIG. 28

The 175 kc signal voltage at the IF output transformer secondary is impressed across the diode plates and the cathode of the 75 tube, in series with the 500M ohm volume control. Current flows from the diode plates to the cathode creating a voltage drop across the volume control, with point (A) negative with respect to ground. Since point (A) is connected to the control grids of the 78 IF and 6A7 osc-translator tubes, the negative bias across the volume control is impressed on these tubes. Any increase in signal increases the negative drop across the volume control, increases the negative control grid bias on the 6A7 and 78, reduces their amplification and so tends to maintain the signal at the IF output at a constant value.

Any desired portion of the AF component across the volume control resistance is picked off by the moving arm of the volume control, fed through the .006 condenser to the grid of the triode portion of the 75 tube. It is then amplified and fed to the output tube and then to the speaker.

Use a low output from the test oscillator when peaking the IF, as mentioned previously.

On some of the AC-DC models, it may be found that the receiver will not tune to 1280 kc (its limit). This can be corrected by moving the lead, which goes from the end section of the tuning condenser to lug #3 of coil L4, away from the chassis. The lead can be kept from the chassis by means of a rubber band holding it against the electrolytic condenser block, as shown in Fig.25.

MODEL 250 AC,279 AC,
300 AC,301 AC,
250-300 AC
Voltage

COLONIAL RADIO CORP.

TUBE VOLTAGE AND CURRENT CHARTS

MODELS 250AC - 279AC - 300AC

TUBE	PLATE VOLTS	SCREEN VOLTS	GRID VOLTS	PLATE M.A.	SCREEN M.A.
6B7 - IF	165	80	*	.9	.23
77 - Det	50	45	*	.15	.05
41 - Output	150	165	*	16	2.3
6A7 - Osc-Transl	Ep=165; Eg #1=-4v; Eg #2=165v; Eg #3&5=76v; Eg #4=*; Ip=3.75ma; Ig #2=2.2ma; Eg #3&5=3.5ma.				
84 - Rect	Plate Current = 17m.a. per plate				

MODELS 250 and 300 (Extended Range)

TUBE	PLATE VOLTS	SCREEN VOLTS	GRID VOLTS	PLATE M.A.	SCREEN M.A.
78 - IF	105	40	*	2.5	1
75 - AVC-Det-AF	55		*	.2	
43 - Output	90	105	-6*	19	3
6A7 - Osc-Transl	Ep=105v; Eg #2=105v; Eg #3&5=32v; Eg #4=*; Ip=.8ma; Ig #2=1.1ma; Ig #3&5=1ma.				
25Z5- Rect	Plate current - 38m.a. per plate				

MODELS 250AC and 300AC (Extended Range)

TUBE	PLATE VOLTS	SCREEN VOLTS	GRID VOLTS	PLATE M.A.	SCREEN M.A.
78 - IF	185	65	*	4	1
75 - AVC-Det-AF	105		*	.75	
41 - Output	175	185	-10*	17	2.5
6A7 - Osc-Transl	Ep=185v; Eg #2=185v; Eg #3&5=60v; Eg #4=*; Ip=2.5ma; Ig #2=2.75ma; Ig #3&5=1.75ma.				
84 - Rect	Plate current = 15m.a. per plate; DC voltage = 275.				

* - Indicates high series resistance.
Care should be used when taking readings with a set analyzer as the capacity of the cables may cause circuits to oscillate, giving rise to erratic readings. Usually, touching the finger to grid or plate is sufficient to stop oscillation. If an analyzer is not used, the voltage readings can be taken with a 1000 ohms per volt voltmeter, from cathode to the respective elements of each tube. Ordinarily, a 20% deviation from the chart value may be allowed.

COLONIAL RADIO CORP.

MODEL 250 AC, 279 AC,
300 AC, 301 AC
Schematic

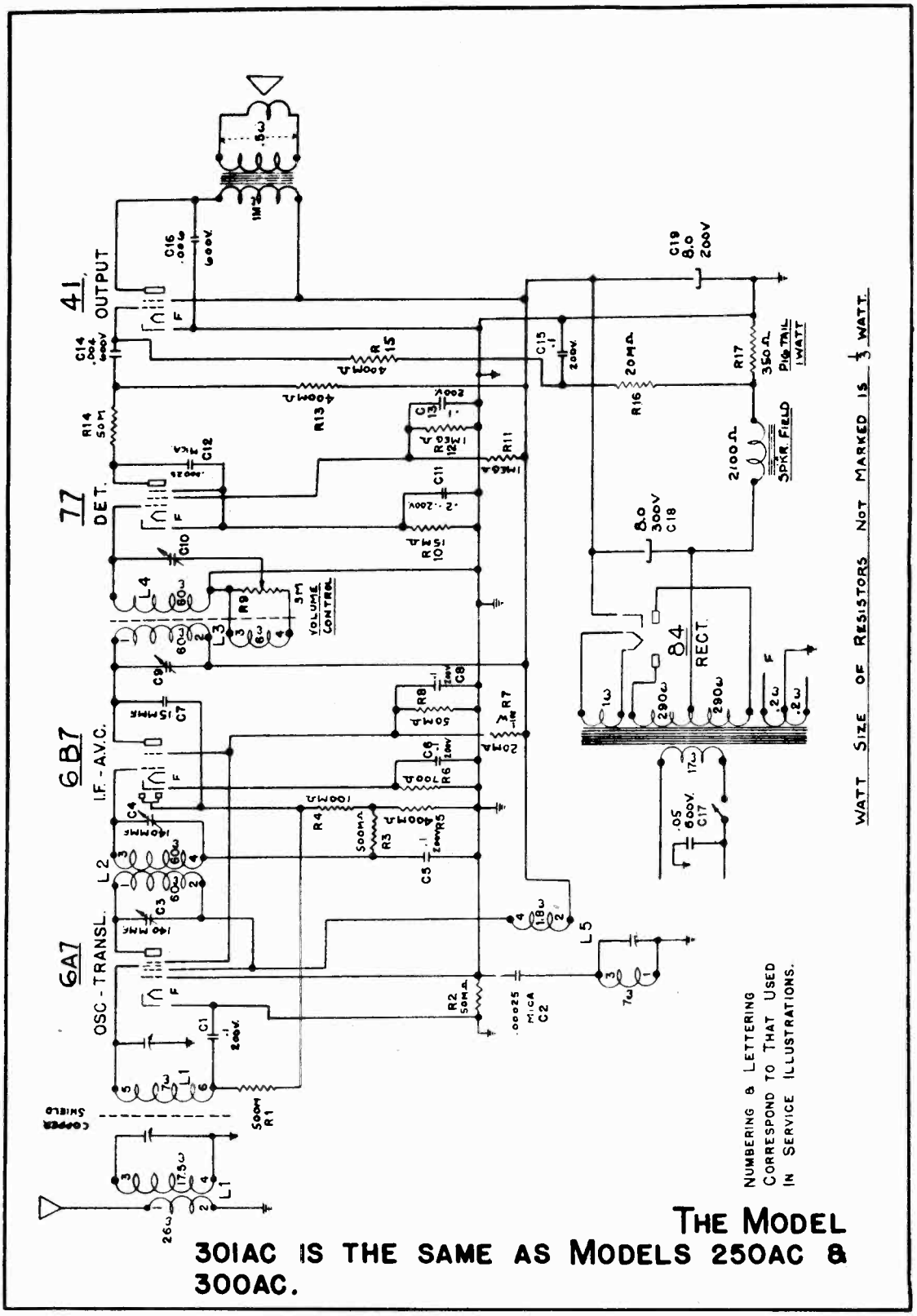


FIG. 22. SCHEMATIC - MODELS 250AC, 279AC and 300AC

MODEL 250 AC, 279 AC,
300 AC, 301 AC,
Parts location

COLONIAL RADIO CORP.

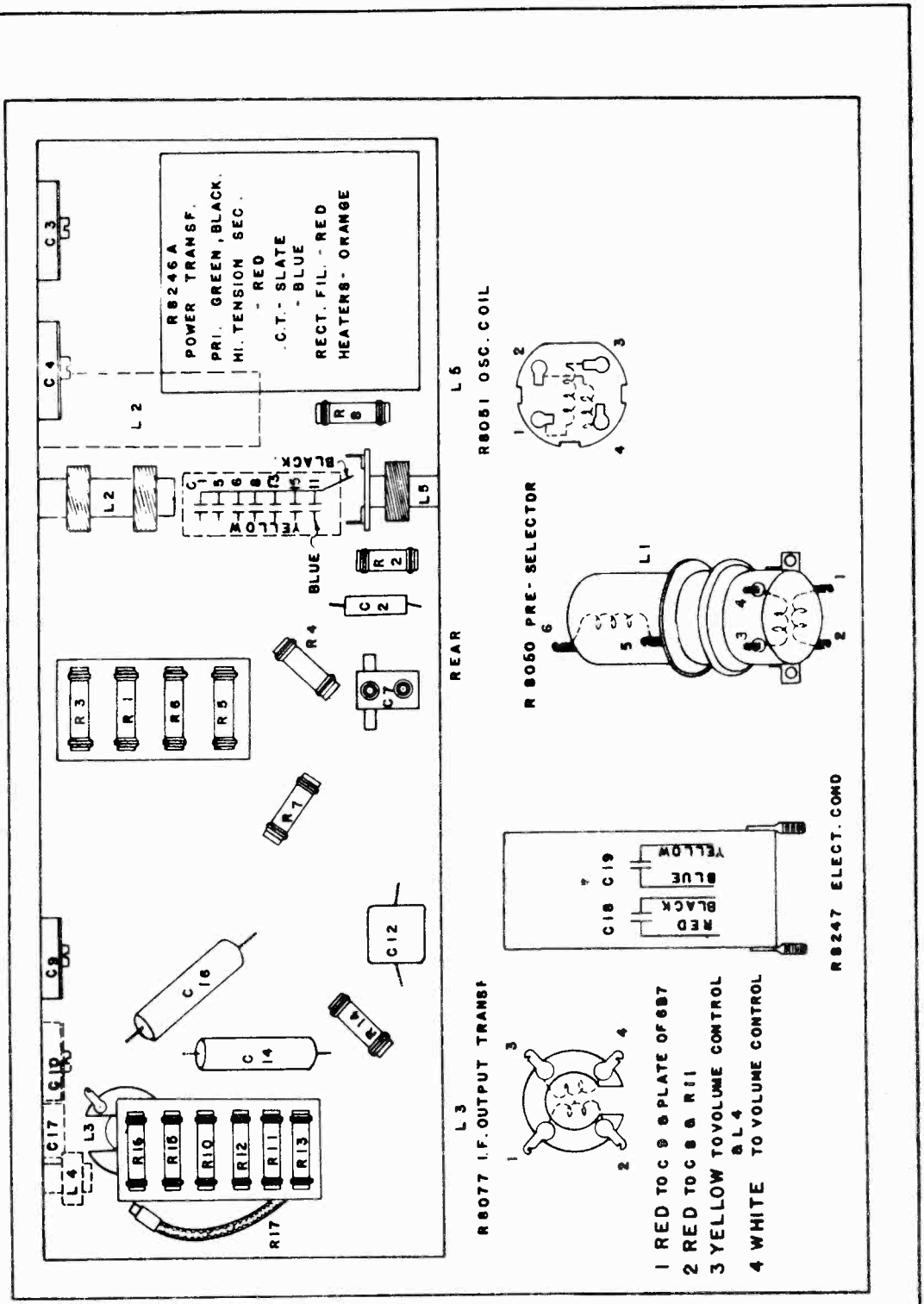


FIG. 23. SERVICE ILLUSTRATIONS - MODELS 250AC, 279AC and 300AC

COLONIAL RADIO CORP.

MODEL 250-300 AC-DC
Schematic

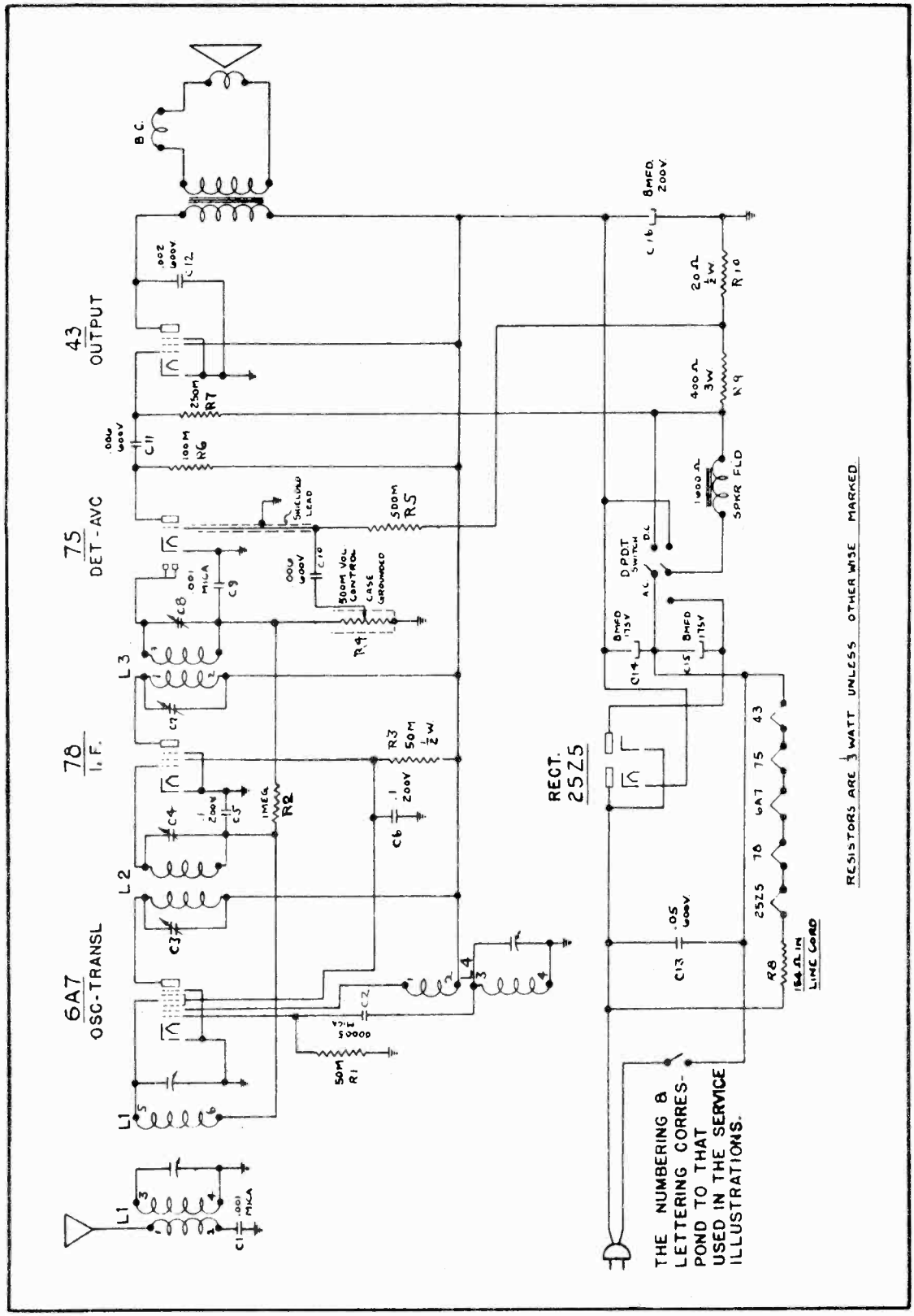


FIG. 24. SCHEMATIC - MODELS 250 - 300 (Extended Range AC-DC)

MODEL 250-300 AC-DC
Parts location

COLONIAL RADIO CORP.

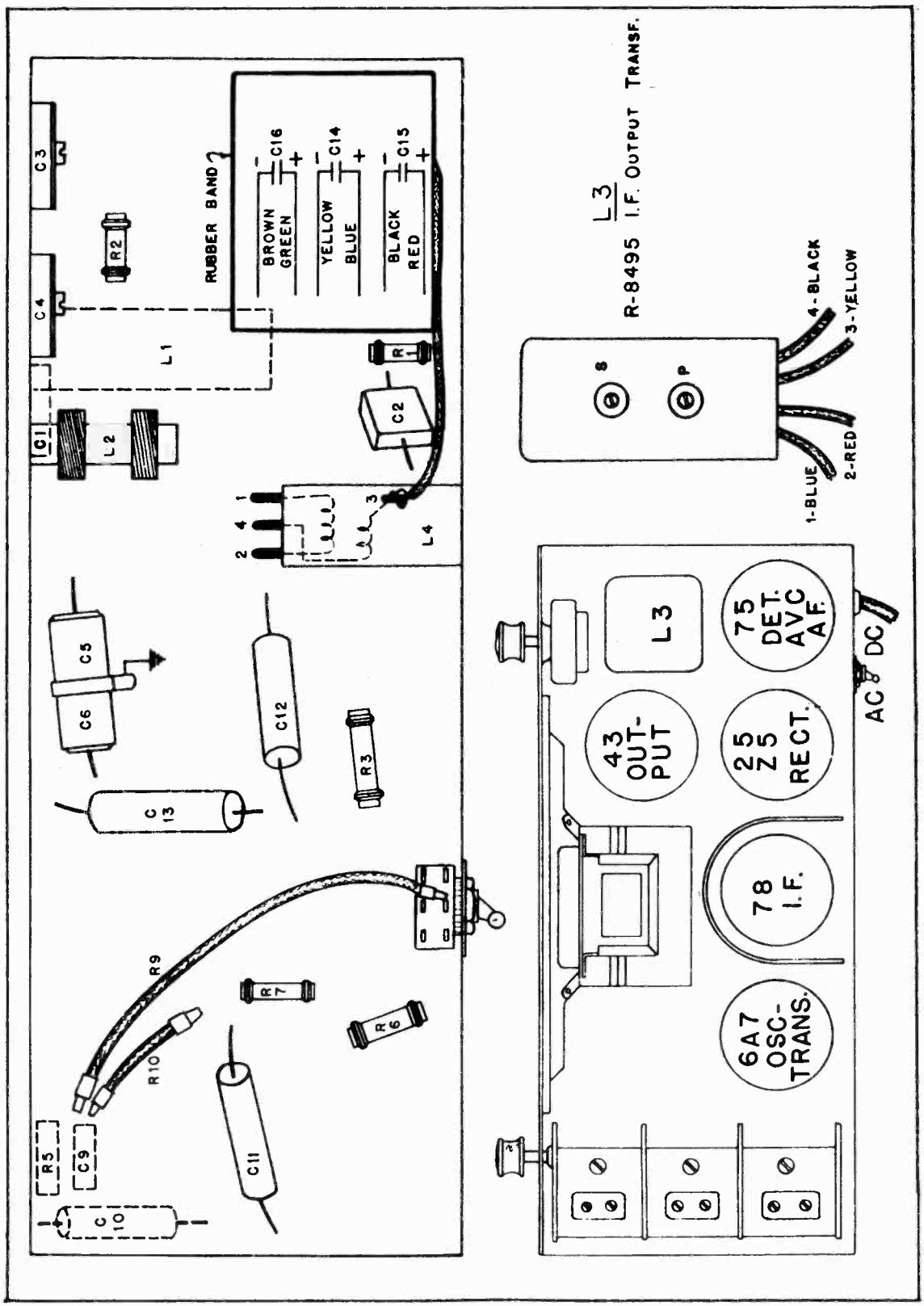


FIG. 25. SERVICE ILLUSTRATION - MODELS 250 - 300 (Extended Range AC-DC)

COLONIAL RADIO CORP.

MODELS 250 AC, 300 AC
Extended range
Schematic

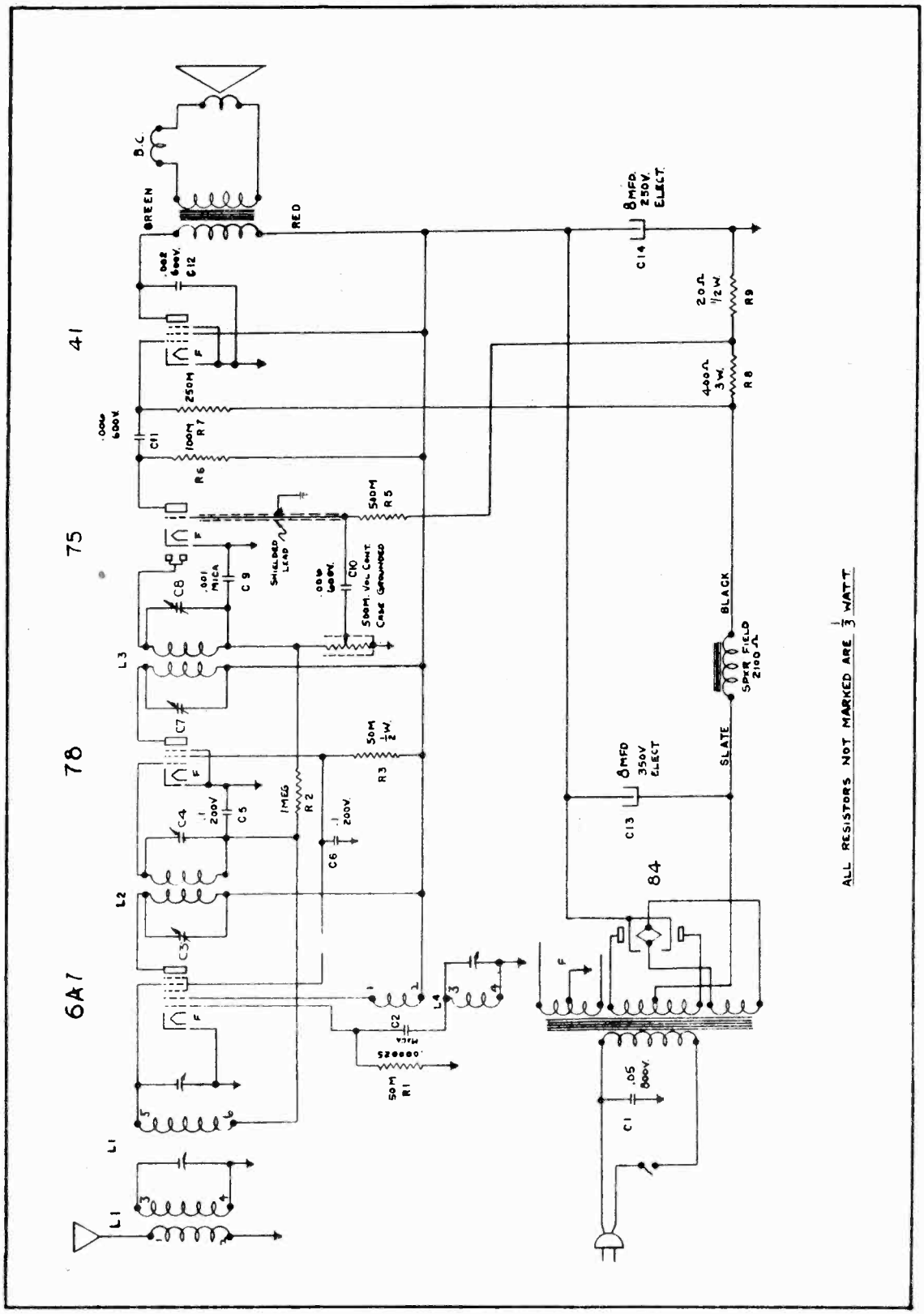


FIG. 26. SCHEMATIC - MODELS 250AC and 300AC (Extended Range)

MODEL 250 AC, 300 AC
Extended range
Parts location

COLONIAL RADIO CORP.

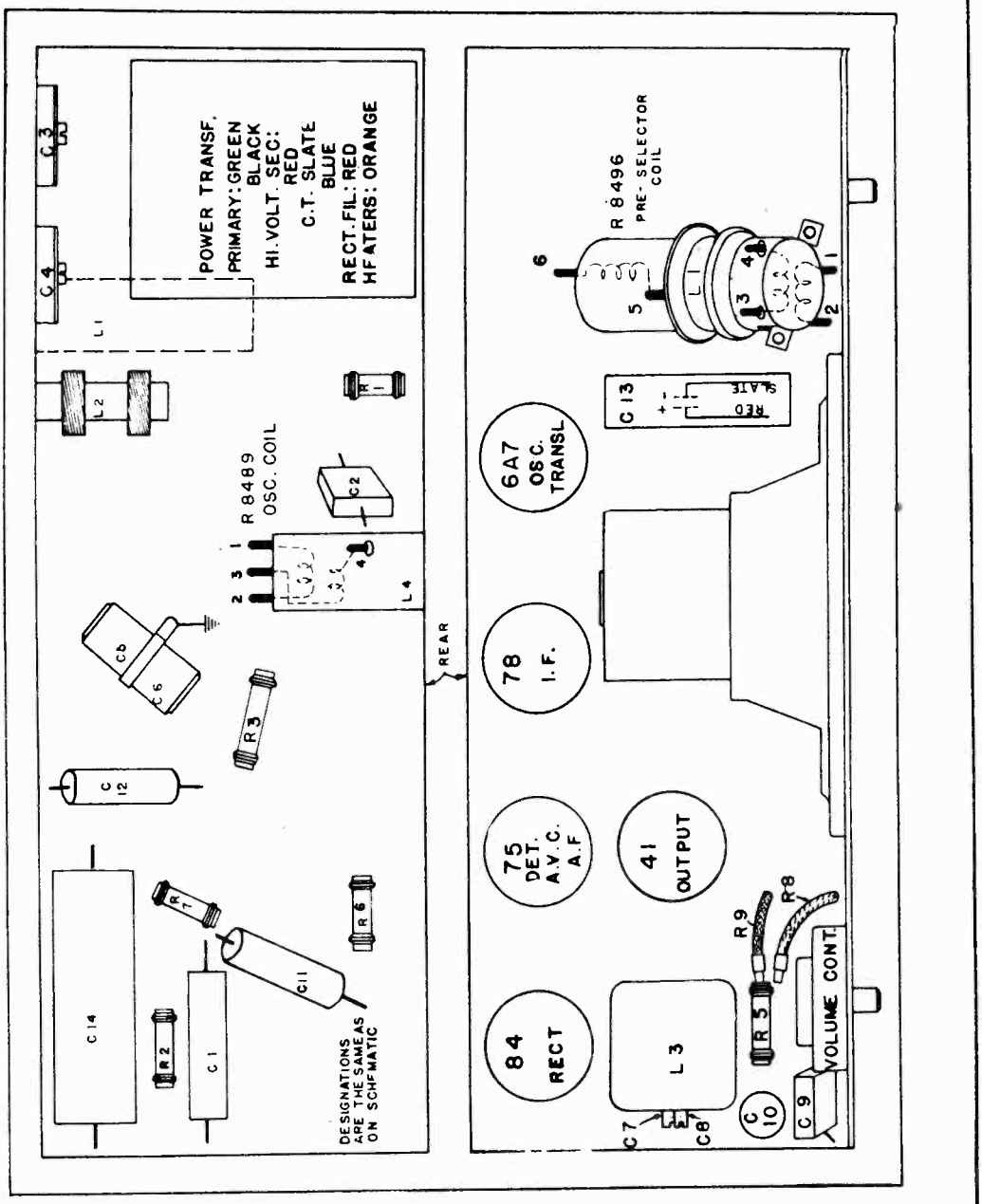


FIG. 27. SERVICE ILLUSTRATION - MODELS 250AC and 300AC (Extended Range)

COLONIAL RADIO CORP.

MODEL 250 AC, 279 AC, 300 AC, 301 AC, 250-300
Parts List

REPLACEMENT PARTS LIST

MODELS 250AC, 279AC and 300AC

PART NO.	DESCRIPTION
R-8045A	Board-Resistor, 10 terminal
R-8044A	Board-Resistor, 8 terminal
R-5509A	Board-Terminal
R-8096	Cabinet-Model 250AC
R-8035	Cabinet-Model 279AC
R-8036	Cabinet-Model 300AC
R-7621	Card-Guarantee
R-8048	Clip-Antenna
R-8047	Clip-Screen Grid
R-8047C	Clip-Screen Grid with 8" lead
R-8095	Coil-Choke detector input
R-8051	Coil-Oscillator
R-8050	Coil-Pre-Selector
R-8247	Condenser-Double, dry electrolytic
R-8038	Condenser-I.F. tuning
R-8052	Condenser-Variable tuning
R-8042	Condenser-.000015 mfd.-AVC coupling
R-4592	Condenser-.00025 mica
R-8248	Condenser-.004 mfd.-600v.
R-8056	Condenser-.006 mfd.-600v.
R-8443	Condenser-.05 mfd. 800v.
R-8097	Condenser-Block of 6-.1 mfd. and 1-.2 mfd.
R-8059	Control-Volume, 3M ohm
R-8279	Cord-Extension, brown
R-8271	Cord-Extension, black
R-8084	Decalcomania-name plate
R-8082	Escutcheon-Station Selector, 250AC and 279AC
R-8086	Escutcheon-Station Selector, 300AC
R-8081	Escutcheon-Volume Control, 250AC and 279AC
R-8614	Escutcheon-Volume Control, 300AC
R-8230	Instruction leaflet
R-8612	Knob-Model 300AC
R-8083	Knob-Model 250AC and 279AC
R-8616	Nut-4/36
R-8462	Nut-6/32
R-3760	Nut-8/32

PART NO.	DESCRIPTION
R-8319	Pin-Escutcheon
R-8252	Resistor-350 ohm pigtail
R-8037	Resistor-700 ohm 1/3 watt carbon
R-6708	Resistor-15M ohm 1/3 watt carbon
R-5821	Resistor-20M ohm 1/2 watt carbon
R-6640	Resistor-20M ohm 1/3 watt carbon
R-6637	Resistor-50M ohm 1/3 watt carbon
R-7586	Resistor-100M ohm 1/3 watt carbon
R-6710	Resistor-400M ohm 1/3 watt carbon
R-7228	Resistor-500M ohm 1/3 watt carbon
R-7585	Resistor-1 megohm 1/3 watt carbon
R-8253	Socket-5 prong
R-8092	Socket-6 prong
R-8072	Socket-7 prong
R-2414	Spacer-I.F. tuning cord
R-4374	Spacer-Resistor board
S-8094	Speaker-2100 ohm
R-8255	Sticker-License and tube layout 250AC
R-8256	Sticker-License and tube layout 279AC
R-8257	Sticker-License and tube layout 300AC
R-7627	Tag-"Distributed by Graybar
R-8039	Transformer-I.F. input
R-8077	Transformer-I.F. output
R-5434	Washer-Chassis to cabinet
R-4794	Washer-Insulating, volume control
R-4330	Washer-Lock #4
R-4327	Washer-Lock #6
R-4328	Washer-Lock #8
R-4329	Washer-Lock #10
R-6614	Washer-Shakeproof, volume control

REPLACEMENT PARTS LIST

MODELS 250 and 300 (Extended Range)

PART NO.	DESCRIPTION
R-8297A	Board-Terminal
R-8308A	Board-Terminal double
R-5509A	Board-Terminal
R-8096	Cabinet-Model 250
R-8036	Cabinet-Model 300
R-8048	Clip-Antenna
R-6381	Clip-Screen Grid
R-6381R	Clip-Screen Grid with 8" lead
R-8489	Coil-Oscillator
R-8496	Coil-Pre Selector
R-8053	Condenser-Electrolytic, triple, dry

PART NO.	DESCRIPTION
R-8038	Condenser-IF tuning
R-8622	Condenser-Tuning
R-8621	Condenser-.00005 mfd. mica
R-6759	Condenser-.001 mfd. mica.
R-8055	Condenser-.002 mfd. 600v.
R-8056	Condenser-.006 mfd. 600v.
R-8057	Condenser-.05 mfd. 600v.
R-8301	Condenser-.1 mfd., dual, 200v.
R-8564	Control-Volume-500M ohm
R-8060	Cord-Extension, brown
R-8090	Cord-Extension, black
R-8080	Decalcomania-Name Plate-Model 250

MODEL 250-300
Extended range
MODEL 250 ACand 300 AC
Extended range
Parts List

COLONIAL RADIO CORP.

R-8084	Decalcomania-Name Plate-Model 300
R-8671	Escutcheon-Station Selector Model 250
R-8613	Escutcheon-Station Select. Model 300
R-8663	Escutcheon-Volume Control, Model 250
R-8614	Escutcheon-Volume Control, Model 300
R-8566	Instruction leaflet
R-8664	Knob-Model 250
R-8612	Knob-Model 300
R- 954	Nut-4/36
R- 951	Nut-6/32
R-8491	Resistor-20 ohm pigtail
R-8562	Resistor-400 ohm pigtail
R-6445	Resistor-50M ohm 1/2 watt carbon
R-6637	Resistor-50M ohm 1/3 watt carbon
R-7586	Resistor-100M ohm 1/3 watt carbon
R-7584	Resistor-250M ohm 1/3 watt carbon
R-7228	Resistor-500M ohm 1/3 watt carbon
R-7585	Resistor-1 Megohm 1/3 watt carbon
R-8092	Socket-6 prong
R-8072	Socket-7 prong
S-8093	Speaker-1600 ohm
R-8493	Sticker-License and tube layout-Model 250
R-8596	Sticker-License and tube layout-Model 300
R-7856	Sticker-RMA
R-8076	Switch-AC-DC
R-8039	Transformer-IF input
R-8495	Transformer-IF output

REPLACEMENT PARTS LIST

MODELS 250AC and 300AC (Extended Range)

PART NO.	DESCRIPTION
R-8228A	Antenna wire and clip
R-5509A	Board-Terminal
R-8308A	Board-Terminal double
R-8096	Cabinet-Model 250AC
R-8036	Cabinet-Model 300AC
R-8048	Clip-Antenna
R-6381	Clip-Grid
R-6381R	Clip-Grid with 8" lead
R-8489	Coil-Oscillator
R-8496	Coil-Pre-Selector
R-8748	Condenser-Electrolytic, 8 mfd. 250v
R-8749	Condenser-Electrolytic, 8 mfd. 350v
R-8038	Condenser-I.F. tuning
R-8622	Condenser-Variable tuning
R-8301	Condenser-.1 mfd., 200v dual
R-8443	Condenser-.05 mfd., 800v
R-8056	Condenser-.006 mfd., 600v
R-8055	Condenser-.002 mfd., 600v
R-6759	Condenser-.001 mfd., mica
R-8621	Condenser-.00005 mfd.,mica
R-8747	Control-Volume, 500M ohm
R-8271	Cord-Extension, black
R-3279	Cord-Extension, brown
R-8080	Decalcomania-Name plate Model 250AC
R-8084	Decalcomania-Name plate Model 300AC
R-8671	Escutcheon-Station Selector, Model 250AC
R-8613	Escutcheon-Station Selector, Model 300AC
R-8663	Escutcheon-Volume Control Model 250AC
R-8614	Escutcheon-Volume Control Model 300AC
R-8752	Instruction leaflet
R-8664	Knob-Model 250AC
R-8612	Knob-Model 300AC
R- 954	Nut-4/36
R-8462	Nut-6/32
R-3760	Nut-8/32
R-8491	Resistor-20 ohm, pigtail
R-8562	Resistor-400 ohm 3 watt pigtail
R-6445	Resistor-50M ohms, 1/2 watt, carbon
R-6637	Resistor-50M ohms, 1/3 watt, carbon
R-7586	Resistor-100M ohms, 1/3 watt, carbon
R-7584	Resistor-250M ohms, 1/3 watt, carbon
R-7228	Resistor-500M ohms, 1/3 watt, carbon
R-7585	Resistor-1 megohm, 1/3 watt, carbon
R-8253	Socket-5 prong
R-8092	Socket-6 prong
R-8072	Socket-7 prong
S-8631	Speaker-2100 ohms
R-8750	Sticker-License and tube layout, Model 250AC
R-8751	Sticker-License and tube Layout, Model 300AC
R-7856	Sticker-RMA
R-7627	Tag-"Distributed by Graybar"
R-8039	Transformer, IF input
R-8495	Transformer, IF output

COLONIAL RADIO CORP.

MODEL 400
Notes, Voltage

SERVICE NOTES
MODEL 400

The Colonial Model 400 is a six tube superheterodyne with frequency range from 540 kc to 4300 kc.

A 78 RF stage precedes the 6A7 oscillator-translator. A 78 IF amplifier feeds into the 85 tube which provides AVC, detection and audio amplification. A 41 output tube and an 84 rectifier complete the tube complement.

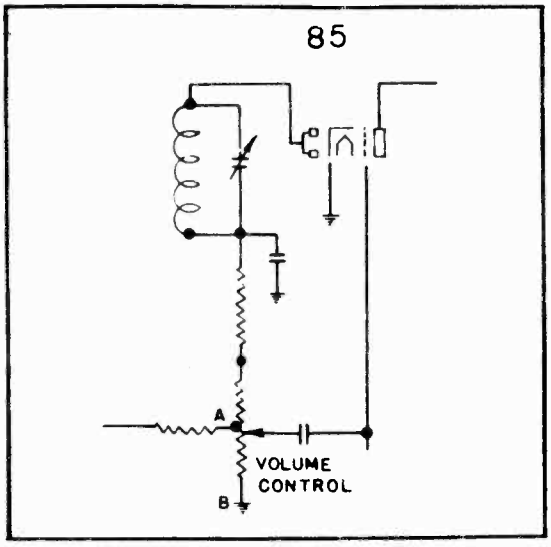


FIG. 28

The AVC-Det-AF circuit is shown in Fig.28. The 175 kc IF signal from the 78 tube is impressed between the diode plates and the cathode of the 85 tube, in series with the 100M resistor and the 725M ohms of the volume control. Since the current flows from the diode plates to the cathode, point (A) is negative with respect to point (B). But since the grid returns of the 78 RF and IF tubes are connected to point (A), the potential across A and B is applied to these grids. Any increase in signal strength increases the current through the diode part of the 85 tube, increases the drop from A to B, increases the negative bias on the 78 tubes and so decreases their amplification. Increases in signal strength are offset by the decrease in amplification so that the input to the detector tends to remain at a constant level.

Residual bias for the 78 tubes is supplied by the 600 ohm "power" or sensitivity control.

The larger the proportion of the 600 ohms included in the circuit, the higher the residual negative bias on the 78 tubes, and the less the sensitivity of the receiver. This sensitivity control should not be advanced more than necessary to secure satisfactory reception in any particular location. Excessive sensitivity will result in undue between-station noise.

The audio voltage existing across the volume control resistance is picked off by the moveable arm of the volume control, and fed through the .02 mfd. condenser to the grid of the triode portion of the 85 tube.

A low value of output from the test oscillator should be used when peaking the IF stage, as explained in the Model 250AC notes.

TUBE VOLTAGE AND CURRENT CHART

TUBE	PLATE VOLTS	SCREEN VOLTS	GRID VOLTS	PLATE M.A.	SCREEN M.A.
78 - RF	155	70	*	4.25	1
78 - IF	155	85	*	5	1.25
85 - AVC-Det-AF	120		*	.75	
41 - Output	155	160	*	12	1.75
6A7 - Osc-Transl	Ep=155v; Eg #2=155v; Eg #3&5=65v; Eg #4=*; Ip=2ma; Ig #2=3.5ma; Ig #3&5=2.5ma.				
84 - Rect	Plate current = 17m.a. per plate				

* - Indicates high series resistance.

MODEL 400
Schematic

COLONIAL RADIO CORP.

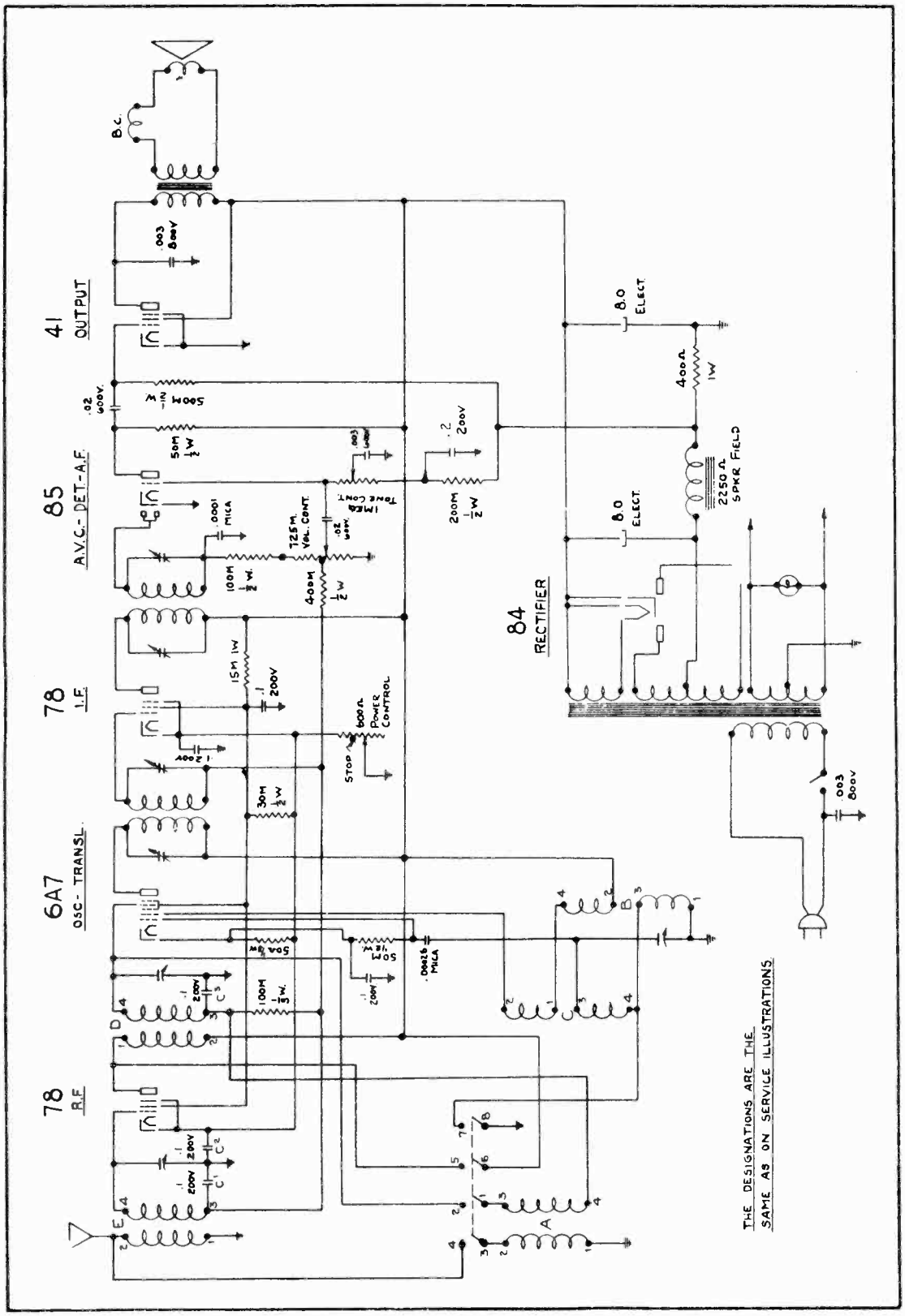


FIG. 29. SCHEMATIC - MODEL 400

COLONIAL RADIO CORP.

MODEL 400
Socket layout

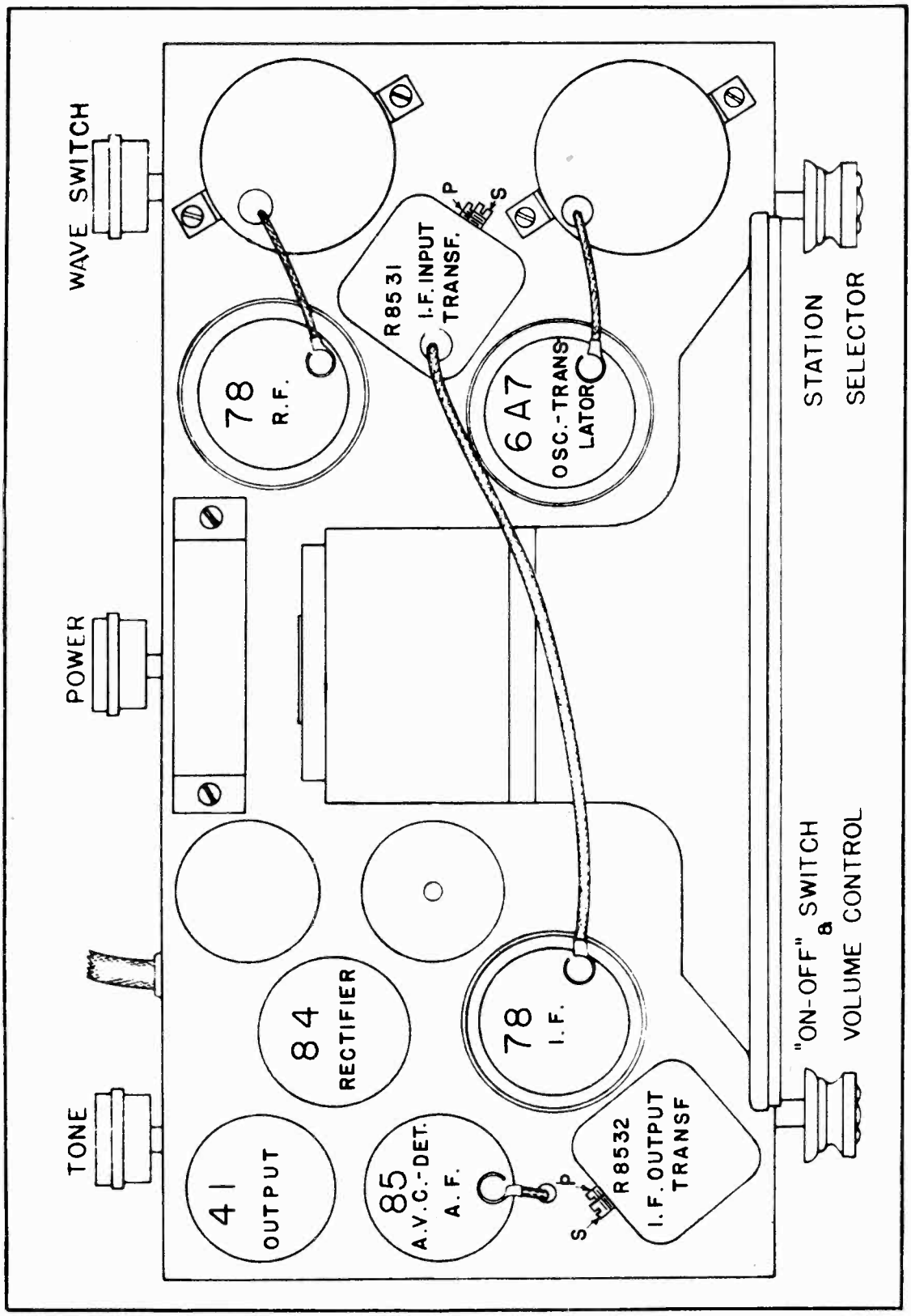
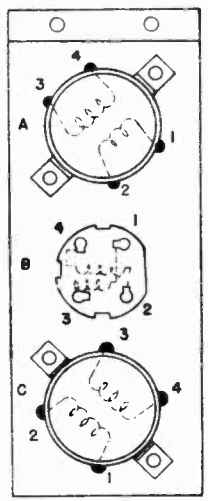


FIG. 30. SERVICE ILLUSTRATION - MODEL 400

R-8624	Condenser-Electrolytic 8 mfd.
R-8514	Condenser-Block of 4-.1 mfd. and 1.2 mfd.
R-6444	Condenser-.1 mfd.-200v
R-6761	Condenser-.02 mfd.-600v
R-6461	Condenser-.003 mfd.-800v
R-7681	Condenser-.003 mfd.-600v
R-8512	Condenser-.0018 mfd.- 600v
R-4592	Condenser-.00025 mica
R-4303	Condenser-.0001 mica

R-6179	Resistor 500M ohm, 1/2 watt carbon
R-5822	Resistor-400M ohm, 1/2 watt carbon
R-5830	Resistor-200M ohm, 1/2 watt carbon
R-5819	Resistor-100M ohm, 1/2 watt carbon

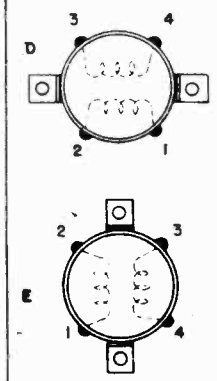


A-R 8507 ANTENNA COIL SHORT WAVE
LUG 1 - TO COIL B LUG 1
LUG 2 - TO SWITCH LUG 3
LUG 3 - TO SWITCH LUG 1
LUG 4 - TO 100M RESISTOR & 1MFD. COND.

B-R8506 OSCILLATOR COIL BROADCAST
LUG 1 - TO SWITCH LUG 8 & GND.
LUG 2 - TO SWITCH LUG 6
LUG 3 - TO COIL C LUG 4
LUG 4 - TO COIL C LUG 1

C-R8508 OSCILLATOR COIL SHORT WAVE
LUG 1 - TO COIL B LUG 4
LUG 2 - TO 6A7 GRID 2
LUG 3 - TO .00025 COND. & STATOR OF FRONT SECTION OF VARIABLE TUNING CONDENSER
LUG 4 - TO COIL B LUG 3 & SWITCH LUG 7

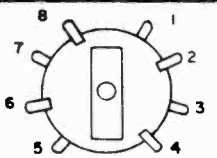
COILS MOUNTED ON TOP OF CHASSIS



D- R 8505 TRANSLATOR COIL - BROADCAST
LUG 1 - TO SWITCH LUG 8 & PLATE OF 78 TUBE
LUG 2 TO SWITCH LUG 6
LUG 3 - TO 100M OHM RESISTOR & .1 MFD. COND.
LUG 4 - TO #4 GRID OF 6A7

E - R 8504 ANTENNA COIL - BROADCAST
LUG 1 - TO GND.
LUG 2 - TO ANT & SWITCH LUG 4
LUG 3 - TO 100M OHM RESISTOR & .1 MFD. COND
LUG 4 - TO CONTROL GRID OF 78 & STATOR, REAR SECTION OF VARIABLE TUNING COND.

BOTTOM OF CHASSIS



R 8529 - WAVE SWITCH

LUG 1 - TO COIL A LUG 3
LUG 2 - TO STATOR, MIDDLE SECTION OF VARIABLE COND
LUG 3 - TO COIL A LUG 2
LUG 4 - TO ANT. & COIL E LUG 2.
LUG 5 - TO COIL D, LUG 1 & PLATE OF 78 TUBE.
LUG 6 - TO COIL D LUG 2, COIL B LUG 2, B+ OF I.F INPUT TRANSFORMER & B +
LUG 7 - TO COIL C LUG 4 & COIL B LUG 3
LUG 8 - TO GND. & COIL B LUG 1

R-6156	Resistor-30M ohm, 1/2 watt carbon
R-6504	Resistor-15M ohm, 1 watt carbon
R-8522	Resistor-400 ohms, 1 watt carbon
R-6632	Resistor-50 ohms, 1/3 watt

S-8466C	Speaker-2500 ohm
R-7586	Resistor-100M ohm, 1/3 watt carbon
R-6445	Resistor-50M ohm, 1/2 watt carbon

FIG. 31. SERVICE ILLUSTRATION - MODEL 400

COLONIAL RADIO CORP.

SERVICE NOTES

MODELS 501 & 501AC

The Model 501 is a five tube AC-DC superheterodyne. It uses a 6A7 oscillator - translator, which creates a 175 kc signal to be amplified by the 78 IF stage. A type 75 tube provides AVC, diode detection and audio amplification. The audio output of the 75 tube is fed to a 43 power output pentode and then to the dyanmic loudspeaker. A 25Z5 acts as a voltage doubling rectifier (on a.c. only). The tube heaters are in series so that if one burns out, none will light. It is necessary, of course, to replace only the burned out tube. The others then will light. A 154 ohm resistor built into the line cord drops the line voltage by approximately 46 volts, leaving the difference to be applied to the tube heaters.

The Model 501 AC is the corresponding AC Model. It has a 41 output pentode and an 84 rectifier. A power transformer is used and all of the tube heaters (6.3 volt) are in parallel.

The 75 AVC - Detector - AF circuit is the same for both receivers. The IF signal is impressed between the diode plates and the cathode of the 75 tube, in series with the 500 M ohms of the volume control. Diode current flows, creating a voltage drop across the volume control with the grounded end at a positive potential to the other, the grid return end. Any increase in signal increases the voltage drop across the volume control and so increases the negative grid bias on the 6A7 and 78 tubes since their cathodes connect to the grounded end of the control and their grid returns to the other end. Since increases in signal strength are offset by decreases in tube amplification due to the increased negative grid bias, the input to the detector tends to remain at a constant value.

Any desired portion of the audio component across the volume control may be picked off by the moveable arm and fed through the .006 mfd. condenser to the control grid of the triode portion of the 75 tube. It is there amplified and then coupled to the output pentode.

When peaking the IF transformers, use a very low output from the test oscillator in order to render the AVC action inoperative.

THE MODEL 501 VOLTAGE DOUBLER

The voltage doubler used in the Model 501 is shown in simplified schematic form in Fig. 59.

At some instant plate "A" of the 25Z5 is positive. Current will flow from it to its cathode, through condenser #1, back to the negative side of the line. Condenser #1 is charged, then, with polarity as shown. One half cycle later the other side of the line becomes positive. Current then flows through condenser #2, charging it as shown, to plate "B", to its cathode and the negative side of the line. The result is that condensers #1 and #2 are charged with their potentials in series so that the total voltage across them is approximately double the applied line voltage. This doubled voltage is filtered by condensers #3 and #4 and the loudspeaker field and then fed to the plates and screens of the tubes.

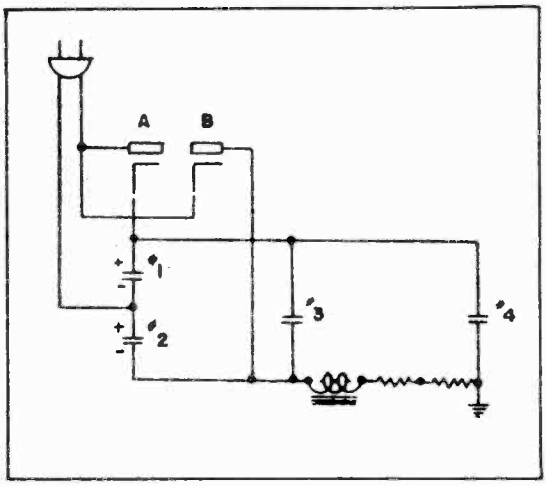


Fig. 59

MODEL 501,501AC
Condenser drive data

COLONIAL RADIO CORP.

OPERATION ON D. C.

The circuit existing when the AC-DC switch is in the d.c. position is shown in Fig. 60. Current flows from the positive side of the line and plate "A" to its cathode, through the load resistance of the receiver (the receiver's plate and screen circuits), back to the negative side of the line. Condenser #4, is parallel to the load, provides filtering. Condensers #1, #2 and #3 and plate "B" are not used for d.c. operation. The speaker field is connected directly across the line.

Polarity of the plug is of no importance with a.c. supply but must be correct when the receiver is operated from d.c. No voltage doubling occurs with d.c.

Both Model 501 and 501 AC are designed to operate without a ground connection. The chassis of Model 501 is above ground potentiel so that it is important that it be not allowed to come in contact with a grounded object. An antenna series condenser is used so that the antenna of either model may be connected to a grounded object (such as a steam radiator) for increased pickup.

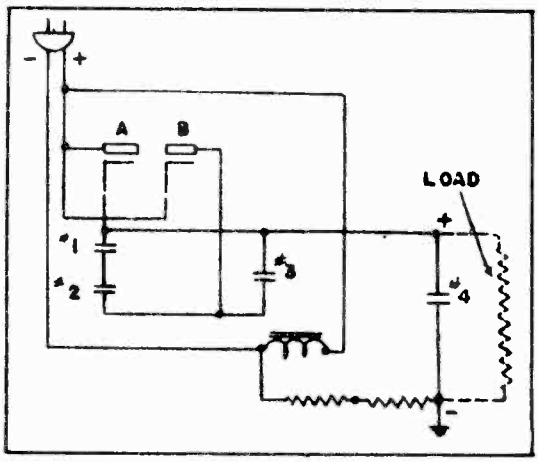


Fig. 60

REPLACING THE CONDENSER DRIVE CABLES

If the following procedure is carefully observed, no difficulty will be experienced in making replacement of broken condenser drive cables.

1. Remove the dial.

2. Put the free end of the cable through the hole in the threaded brass drum. Put a knot in the end of the cable so that the overall length is 14½", and solder the knot. Examination of the old cable will make this clear.

3. Loosen the set screws in the threaded drum, push the drum toward the back of the shaft, and tighten the set screws so that the drum turns stiffly.

4. Turn the threaded drum all the way clockwise and the condensers all the way out. One set screw on the condenser drum then should face straight up and the other should face left.

5. Wind the upper cable on the threaded drum by turning the drum counter clockwise as far as it will go. Then pass the cable across the top of the drum for another quarter turn.

6. Pass the cable around the top of the condenser drum and put its eyelet through the lower slot in the drum. Secure it in place with a wooden wedge in the slot.

7. Wind the other cable around the threaded drum for 1 1/4 turns. Pass it under and around the condenser drum until its eyelet can be put through the upper slot of the drums.

8. Stretch the spring between the eyelets and remove the wooden wedge.

9. If necessary, "dress" the cables so that they are in the proper grooves in the threaded drum. The upper cable should ride on the rear part of the condenser drum without crossing the lower cable which rides on the forward portion of the drum.

10. Loosen the set screws in the threaded drum and back the drum off slightly so that it turns easily.

11. Turn the threaded drum all the way counter clockwise to its stop. Loosen the condenser drum set screws and turn the condenser all the way out until it hits its stop. Then tighten the drum set screws.

12. Tune in a station of known frequency at about 1000 kc and set the dial so that its reading coincides with the station's frequency. Then tighten the dial set screws.

MODEL 501, 501AC
Voltage
Parts List

COLONIAL RADIO CORP.

TUBE VOLTAGE AND CURRENT CHART

MODEL 501

TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	PLATE M. A.	SCREEN M. A.
78 - IF	125	40	2.6	.6
75 - AF-DET-AVC	80		1	
43 - Output	110	125	28	5.5
6A7 - Osc-transl	Ep=125v; Eg #2=125v; Eg #3&#5=30v; Ep=1.7m.a.; Ig#2=2.5m.a.; Ig#3&#5=1.5m.a.			
25Z5 - Rect.	Doubled voltage = 200v. D.C. Plate current = 40m.a.			

TUBE VOLTAGE AND CURRENT CHART

Model 501 AC

TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	PLATE M. A.	SCREEN M. A.
78 - IF	210	70	6.5	1.5
75 - AF-DET-AVC	75		1.5	
41 - Output	200	210	22	3.4
6A7 - Osc-Transl	Ep=210v; Eg#2=210v; Eg#3&#5=70v; Ip=3.6m.a.; Ig#2=3.1 m.a.; Ig #3&#5=1.9m.a.;			
84 - Rect.	D.C. voltage =315v. Plate current = 22 m.a. per plate.			

* - Indicates high series resistance.

Readings taken with a 1000 ohms per volt meter. Care must be used if measurements are made with an analyzer since the capacity of the cables may cause circuits to oscillate, giving rise to erratic readings. Usually, touching the finger to grid or plate is sufficient to stop oscillation. If an analyzer is not used, voltage readings can be made from cathode to the respective elements of each tube.

REPLACEMENT PARTS LIST

Model 501

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
R-8228-A	Antenna Wire & clip	R-9229	Condenser - 8 mfd. dry electrolytic
R-5509-A	Board - Terminal, single		
R-8297-A	Board - Terminal, double	R-8301	Condenser - .1 mfd. 200 volt, dual
R-8308-A	Board - Terminal, triple		
R-9230	Cabinet	R-9145	Condenser - .05 mfd. 600 volt
R-5330-D	Cable - Drive	R-7070	Condenser - .01 mfd. 600 volt
R-8048	Clip - Antenna	R-8056	Condenser - .006 mfd. 600 volt
R-6381	Clip - Grid	R-8055	Condenser - .002 mfd. 600 volt
R-6381AD	Clip - Grid with shielded lead	R-6759	Condenser - .001 mfd. mica
R-9228	Coil - Pre-selector	R-6760	Condenser - .0005 mfd. mica
R-8489	Coil - Oscillator	R-4303	Condenser - .0001 mfd. mica
R-9213	Condenser - Variable tuning	R-8711	Condenser - .000025 mfd. mica
R-8053	Condenser - Dry electrolytic triple	R-9235	Control - Tone
		R-9234	Control - Volume, 500 M ohm
R-8038	Condenser - IF tuning	R-8060	Cord - Power, brown

MODEL 501, 501AC
Parts List

COLONIAL RADIO CORP.

PART NO.	DESCRIPTION
R-8090	Cord - Power, black
R-9214-A	Dial and indicator
R-7502-B	Drum - (condenser)
R-9217	Drum - Drive, threaded
R-9217A	Drum - threaded, and drive cables
R-9306	Escutcheon
R-9231	Instructions
R-9214	Indicator
R-9312	Knob
R-9313	Knob - Large
R-9168	Lamp - Pilot
R-5321	Pin - Escutcheon
R-8091	Plate - AC-DC
R-7585	Resistor - 1 megohm, 1/3 watt carbon
R-7228	Resistor - 500 M ohms,1/3 watt carbon
R-7584	Resistor - 250 M ohms,1/3 watt carbon
R-7586	Resistor - 100 M ohms,1/3 watt carbon
R-6637	Resistor - 50 M ohms, 1/3 watt carbon
R-6445	Resistor - 50 M ohms,1/2 watt carbon
R-8562	Resistor - 400 ohm, 3 watt, flexible
R-8491	Resistor - 20 ohm, 1/2 watt, flexible
R-9270	Socket - Pilot light
R-8315	Socket - 4 prong
R-8092	Socket - 6 prong
R-8072	Socket - 7 prong
S-9117C	Speaker - 8", 1400 ohm
S-7776B	Speaker - cone and voice coil and suspension assembly
S-9124	Speaker - field coil
S-7893	Speaker - hum bucking coil
S-7769	Speaker - cardboard clamping ring
S-7770	Speaker - cardboard clamping ring
S-7414	Speaker - 4 prong plug
S-9125AC	Speaker - Transformer
R-7687	Spring - Drive drum
R-9219	Sticker - License and tube lay-out
R-8076	Switch - AC-DC
R-8039	Transformer - IF input
R-8495	Transformer - IF output

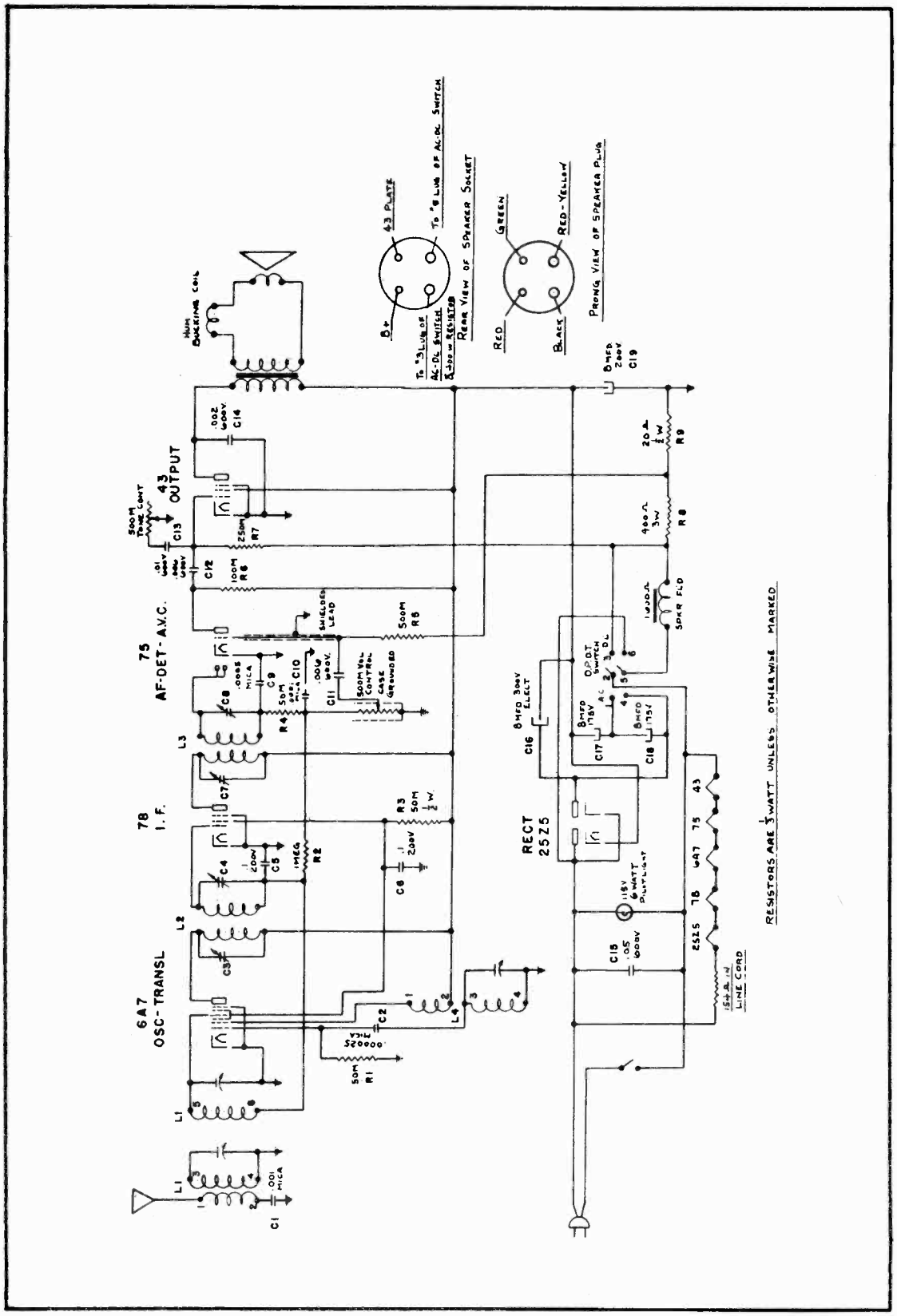
REPLACEMENT PARTS LIST

MODEL 501AC

PART NO.	DESCRIPTION
R-8228-A	Antenna wire with clip
R-5509-A	Board - Terminal, single
R-8297-A	Board - Terminal, double
R-8308-A	Board - Terminal, triple
R-9446-A	Board - Terminal, 4 terminals
R-8900-B	Board - Terminal, 5 terminals
R-9230	Cabinet
R-5330-D	Cable - Drive
R-8048	Clip - Antenna
R-6381	Clip - Grid
R-8489	Coil - Oscillator
R-9228	Coil - Pre-selector
R-9213	Condenser - Variable tuning
R-8038	Condenser - IF tuning
R-9344	Condenser - 8 mfd. 350 volt, electrolytic
R-9345	Condenser - 8 mfd. 400 volt, electrolytic
R-8301	Condenser - .1 mfd. 200 volt, dual
R-8286	Condenser - .1 mfd. 200 volt
R-8443	Condenser - .05 mfd. 800 volt
R-6761	Condenser - .02 mfd. 600 volt
R-8056	Condenser - .006 mfd. 600 volt
R-8055	Condenser - .002 mfd. 600 volt
R-6759	Condenser - .001 mfd. mica
R-8711	Condenser - .000025 mfd. mica
R-9235	Control - Tone
R-9277	Control - Volume, 500 M ohm
R-8279	Cord - Extension, brown
R-8271	Cord - Extension, black
R-9214-A	Dial and indicator
R-7502-B	Drum (condenser)
R-9217	Drum - drive, threaded
R-9217-A	Drum - drive, threaded with cables
R-9306	Escutcheon
R-9264	Instructions
R-9214	Indicator
R-9312	Knob
R-9313	Knob - large
R-2288	Lamp - Pilot
R-5321	Pin - Escutcheon
R-7585	Resistor - 1 megohm, 1/3 watt carbon
R-7228	Resistor - 500 M ohms, 1/3 watt carbon
R-7584	Resistor - 250 M ohms, 1/3 watt carbon
R-7586	Resistor - 100 M ohms, 1/3 watt carbon
R-6637	Resistor - 50 M ohms, 1/3 watt carbon
R-6445	Resistor - 50 M ohms, 1/2 watt carbon
R-9335	Resistor - 12 M ohms, 1/3 watt carbon
R-8562	Resistor - 400 ohms, 3 watt, flexible
R-8491	Resistor - 20 ohms, 1/2 watt flexible
R-4128	Socket - Pilot light
R-8315	Socket - 4 prong
R-8253	Socket - 5 prong
R-8092	Socket - 6 prong
R-8072	Socket - 7 prong
S-9267-C	Speaker - 8", 2500 ohm
S-7776-B	Speaker - Cone, voice coil and suspension assy.
S-9269	Speaker - Field coil
S-7893	Speaker - hum bucking coil
S-7414	Speaker - plug, 4 prong
S-9266AS	Speaker - Transformer
R-7687	Spring - Drive drum
R-8039	Transformer - IF input
R-8495	Transformer - IF output
R-9324-A	Transformer - 60 cycle power

COLONIAL RADIO CORP.

MODEL 501
Schematic



RESISTORS ARE ½ WATT UNLESS OTHERWISE MARKED

FIG. 61 - THE SCHEMATIC DIAGRAM - MODEL 501

MODEL 501
Socket layout
Parts location

COLONIAL RADIO CORP.

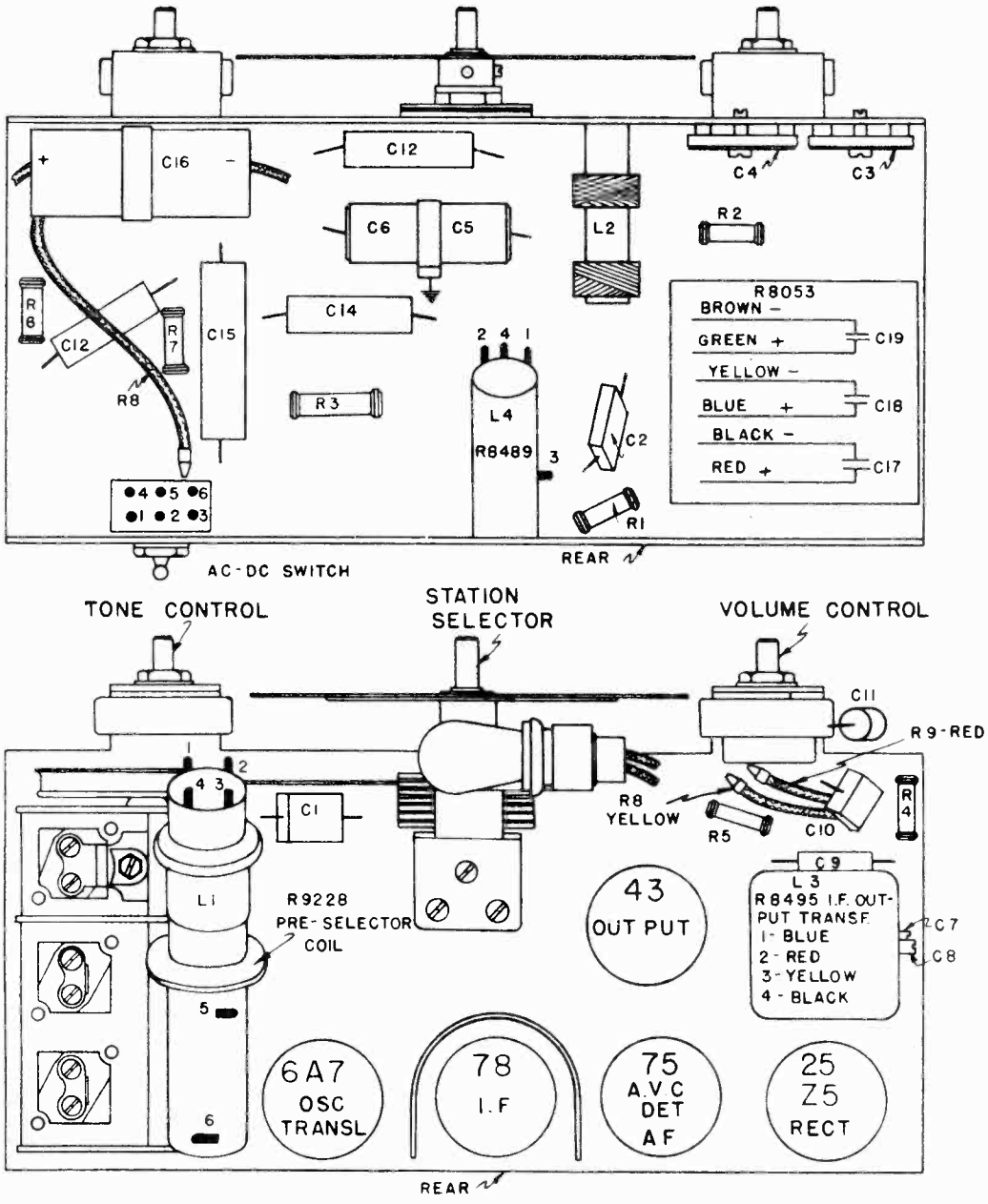


FIG. 63 - SERVICE ILLUSTRATIONS - MODEL 501

COLONIAL RADIO CORP.

MODEL 501 AC
Schematic

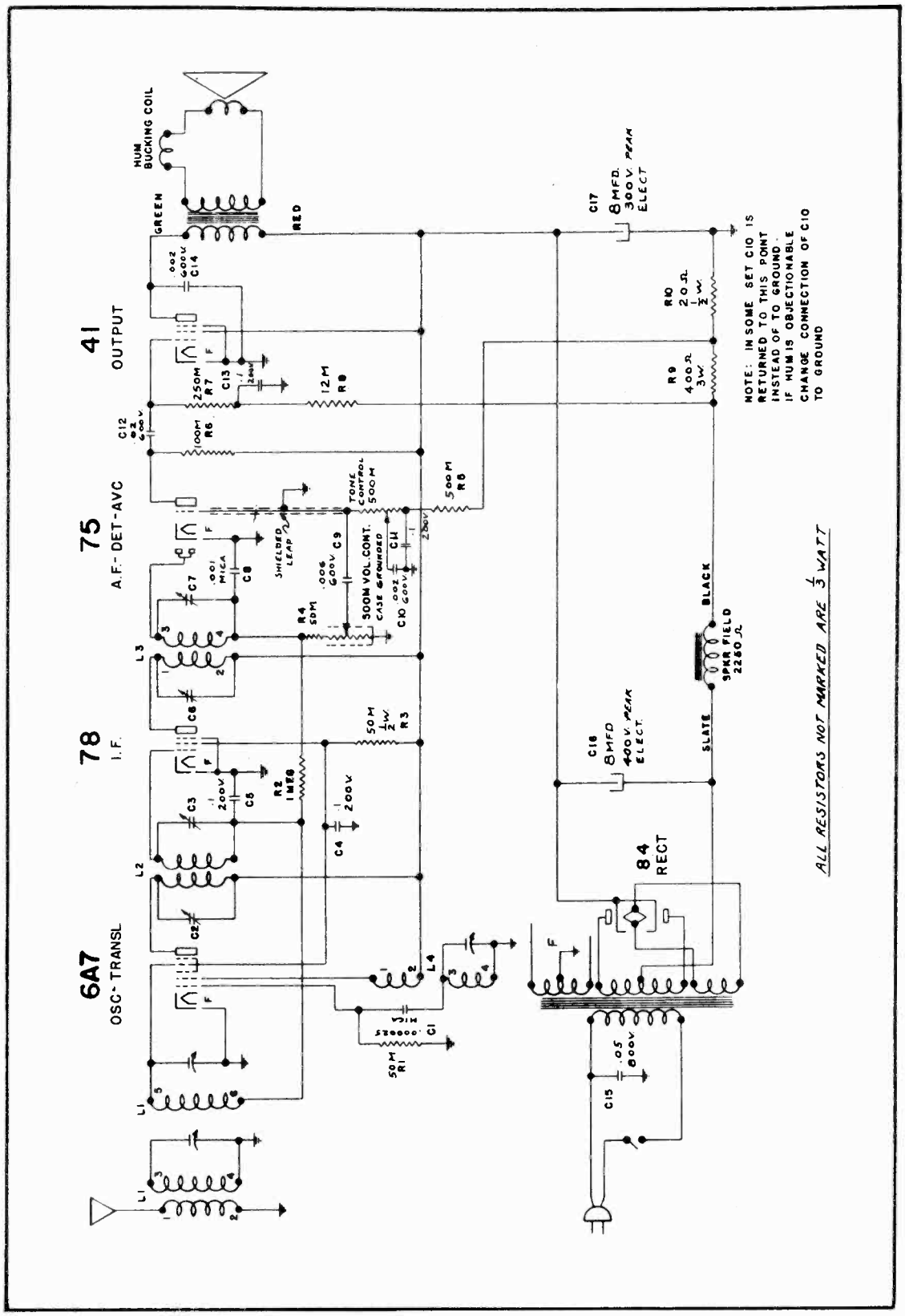


FIG. 62 - THE SCHEMATIC DIAGRAM - MODEL 501AC

MODEL 501 AC
Socket layout
Parts location

COLONIAL RADIO CORP.

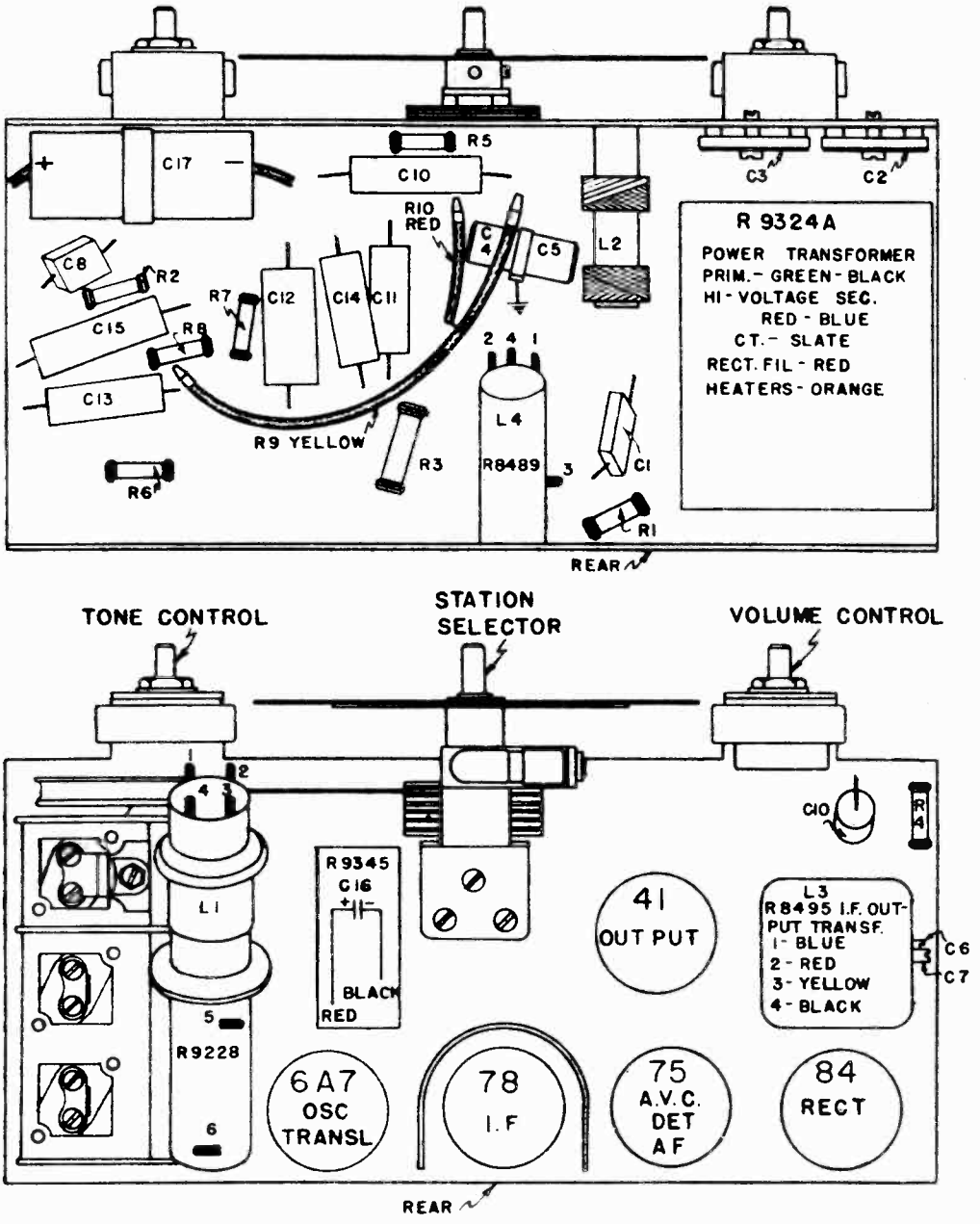


FIG. 64 - SERVICE ILLUSTRATION - MODEL 501AC

COLONIAL RADIO CORP.

MODEL 600, 600-A
Circuit notes
Voltage

SERVICE NOTES

MODELS 600 & 600A

INTRODUCTION

The Colonial Models 600 and 600-A are six tube superheterodynes with frequency range extended to 2500 kc. The circuit is shown in block form in Fig.65 and schematically in Fig. 66.

Resistance input coupling is used to the 78 RF tube. A 6A7 pentagrid converter functions as oscillator and translator. Litz wound coils are used in the RF, translator, and oscillator circuits. The 175 kc signal generated in the 6A7 plate circuit is amplified by the 78 IF stage and then coupled to the 85 tube. This tube provides AVC, diode detection and audio amplification. Its audio output is fed to the 41 pentode output tube and thence to the dynamic loud speaker.

THE AVC - DETECTOR - AF CIRCUIT

The IF signal is impressed between the diode plates and cathode of the 85 tube, in series with R7, R8 and R9. (See schematic diagram.) Diode current flows, creating voltage drops across these resistors. R9 is merely a filter resistor. R7 and R8 form a voltage divider for the AVC voltage. The voltage across R7 is impressed on the control grids of the RF, oscillator-translator, and IF tubes. An increase in signal strength increases the diode current, increases the drop across R7, increases the negative grid bias on the 6A7 and 78 tubes and so reduces their amplification. Increases in signal strength are offset by corresponding decreases in tube amplification so that the IF output tends to remain at a constant value.

The voltage across R7 and R8 also is across the volume control. The audio frequency component of this voltage is picked off by the moveable arm of the volume control and fed through C14 to the control grid of the triode portion of the 85 tube where it is amplified.

When peaking the IF transformers use a signal from the test oscillator just strong enough to give a readible deflection on the output meter or an audible signal from the loud speaker.

TUBE VOLTAGE AND CURRENT CHART

TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	PLATE M.A.	SCREEN M. A.
78 - RF	225	105	7	1.6
78 - IF	225	105	7	1.6
85 - AVC-Det-AF	165		3.5	
41 - Output	220	230	21	3.5
6A7 - Osc-Transl	Ep=225v; Eg#2=105v; Eg#3&#5=70v; Ip=2m.a.; Ig#2= 2m.a.; Ig#3&#5=2m.a.;			
80 - Rect.	Max. d.c. voltage = 370 volts. Plate current = 28 m. a. per plate			

Readings taken with antenna disconnected and no signal received. Care should be used if readings are taken with an analyzer as the capacity of the cables may cause circuits to oscillate, giving rise to erratic readings. Usually, touching the finger to grid or plate will stop oscillation. If an analyzer is not used, voltage readings may be taken from the cathode to the respective element of each tube.

MODEL 600, 600-A
Parts List
Block schematic

COLONIAL RADIO CORP.

REPLACEMENT PARTS LIST

MODELS 600 AND 600A

PART NO.	DESCRIPTION
R-5509A	Board - Terminal, single
R-8297A	Board - Terminal, double
R-8308A	Board - Terminal, triple
R-8900B	Board - Terminal, 5 terminals
R-9305	Cabinet - Model 600
R-9395	Cabinet - Model 600A
R-4715	Clamp - Ant. & gnd. leads
R-7011A	Clip - Ant. & gnd. leads
R-6381	Clip - Grid
R-6381W	Clip - Grid with 7½" lead
R-7031	Clip - Pilot light
R-9323	Coil - Oscillator
R-9322	Coil - Pre-selector
R-9310	Condenser - Variable tuning
R-6565-	Condenser - IF tuning
R-7236	Condenser - 14 mfd. electrolytic
D-4758P	Condenser - 8 mfd. electrolytic
R-6444	Condenser - .1 mfd. 200 volt
R-8301	Condenser - .1 mfd. 200 volt, dual
R-6761	Condenser - .02 mfd. 600 volt
R-7070	Condenser - .01 mfd. 600 volt
R-7244	Condenser - .006 mfd. 600 volt
R-7681	Condenser - .003 mfd. 600 volt
R-4592	Condenser - .00025 mfd. mica
R-4303	Condenser - .0001 mfd. mica
R-8711	Condenser - .00001 mfd. mica
R-6571	Control - Tone
R-9296	Control - Volume
R-7566	Cord - Power supply
R-9348A	Cover - Ant. resistor and cond.
R-9333A	Dial and Indicator
R-9311	Escutcheon
R-9330	Instructions
R-9314	Knob - Large
R-9313	Knob - Medium
R-2288	Lamp - Pilot
R-5346B	Lead - Ant. with clip
R-5345D	Lead - Gnd. with clip
R-5321	Pin - Escutcheon
R-7585	Resistor - 1 megohm, 1/3 watt carbon
R-7228	Resistor - 500 M ohms, 1/3 watt carbon
R-7584	Resistor - 250 M ohms, 1/3 watt carbon
R-6638	Resistor - 200 M ohms, 1/3 watt carbon
R-7586	Resistor - 100 M ohms, 1/3 watt carbon
R-6210	Resistor - 75 M ohms, 1/2 watt carbon
R-6637	Resistor - 50 M ohms, 1/3 watt carbon
R-5095	Resistor - 20 M ohms, 1 watt carbon
R-6634	Resistor - 2 M ohms, 1/3 watt carbon
R-6276	Resistor - 200 ohms, 1/2 watt carbon
R-8562	Resistor - 400 ohms, flexible
R-6006B	Shaft - Dial drive
R-7235	Shield - Electrolytic cond.
R-8803A	Shield - IF transformer
R-5323A	Shield - Tube, bottom
R-5322	Shield - Tube, top
R-8366	Socket - 4 prong
R-8368	Socket - 6 prong
R-8369	Socket - 7 prong
R-5153-7½	Spaghetti - For grid lead
S-8465C	Speaker - 8", 2500 ohm
S-7776B	Speaker - 8", cone & voice Coil
S-8569	Speaker - 8", field coil
S-7893	Speaker - 8", hum bucking coil
S-7414	Speaker - 8", plug
S-8470AS	Speaker - 8", transformer
R-9331	Sticker - License & tube layout 60 cycle, Model 600
R-9332	Sticker - License & tube layout 25 cycle, Model 600
R-9409	Sticker - License & tube layout 60 cycle, Model 600A
R-9410	Sticker - License & tube layout 25 cycle, Model 600A
R-8801	Transformer - IF
R-8801G	Transformer - IF input, less shield
R-8802G	Transformer - IF output, less shield
R-9325A	Transformer - 60 cycle power
R-9326A	Transformer - 25 cycle power

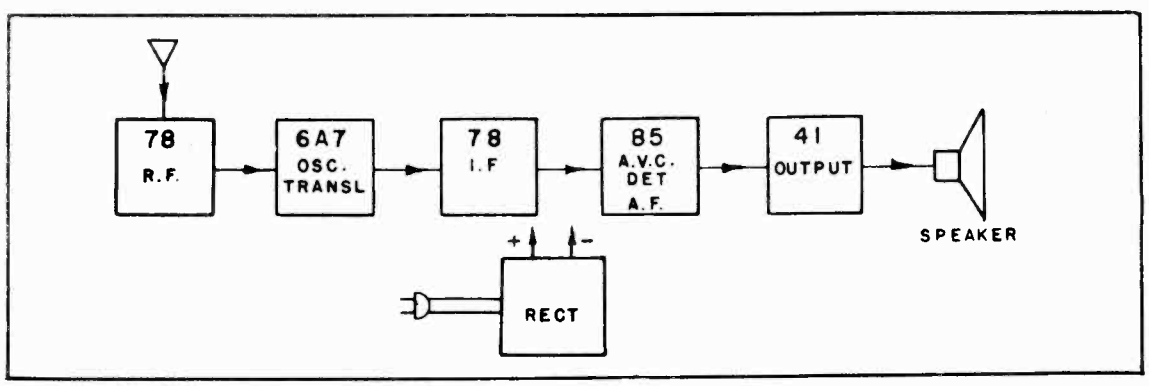


FIG. 65

COLONIAL RADIO CORP.

MODEL 600, 600-A
Schematic

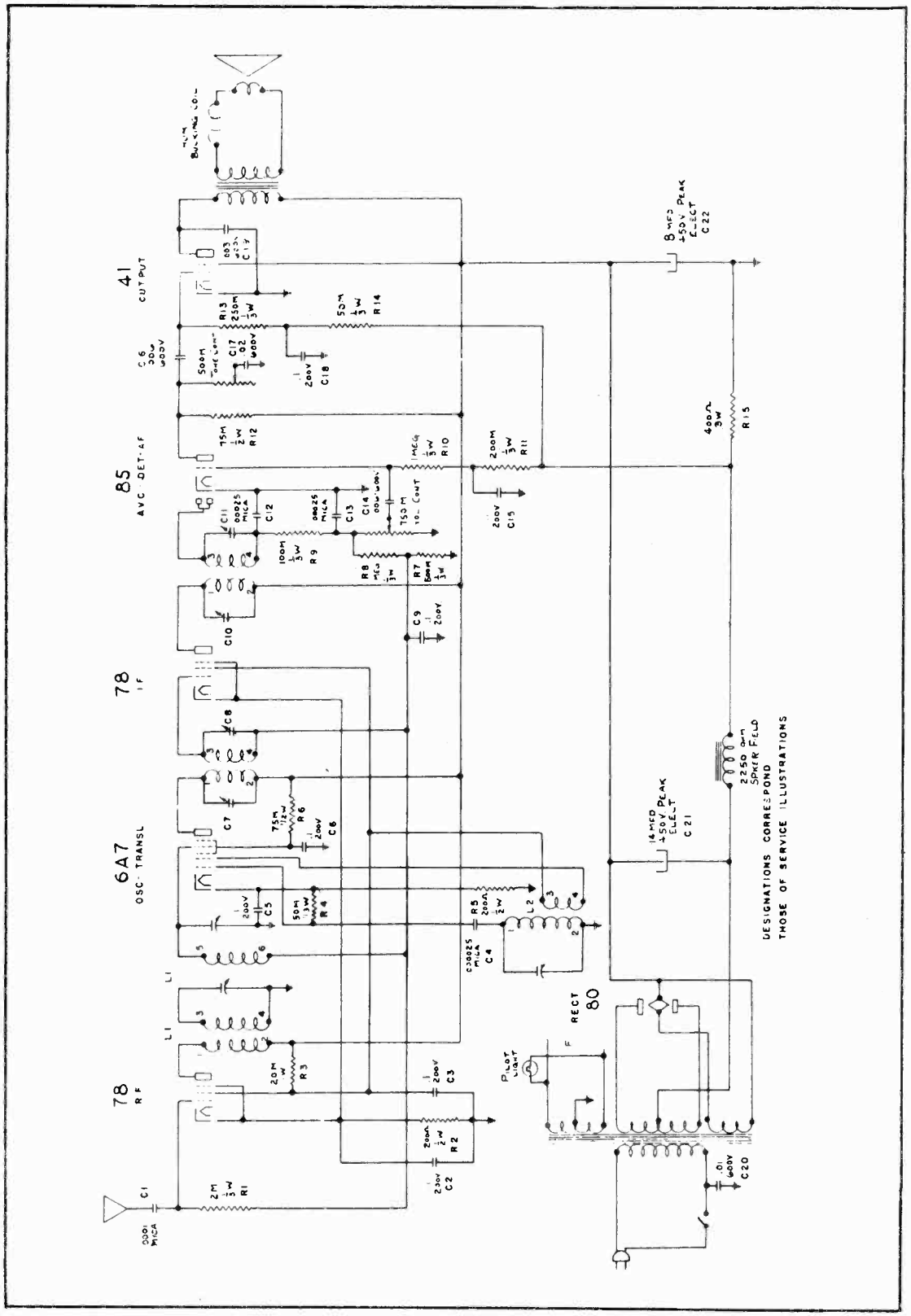
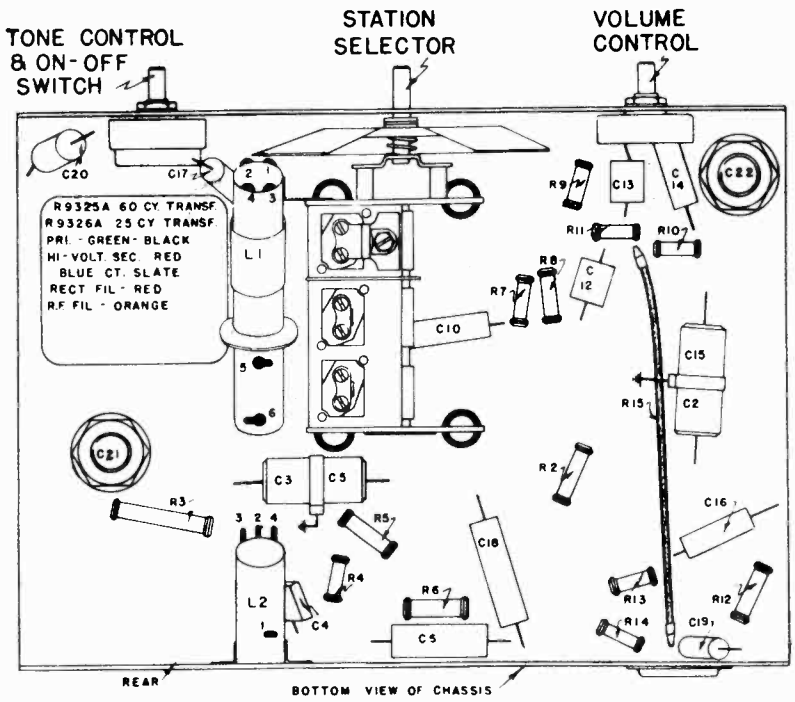


FIG. 66. THE SCHEMATIC DIAGRAM - MODELS 600 and 600A

MODEL 600, 600-A
Parts location
Socket layout

COLONIAL RADIO CORP.



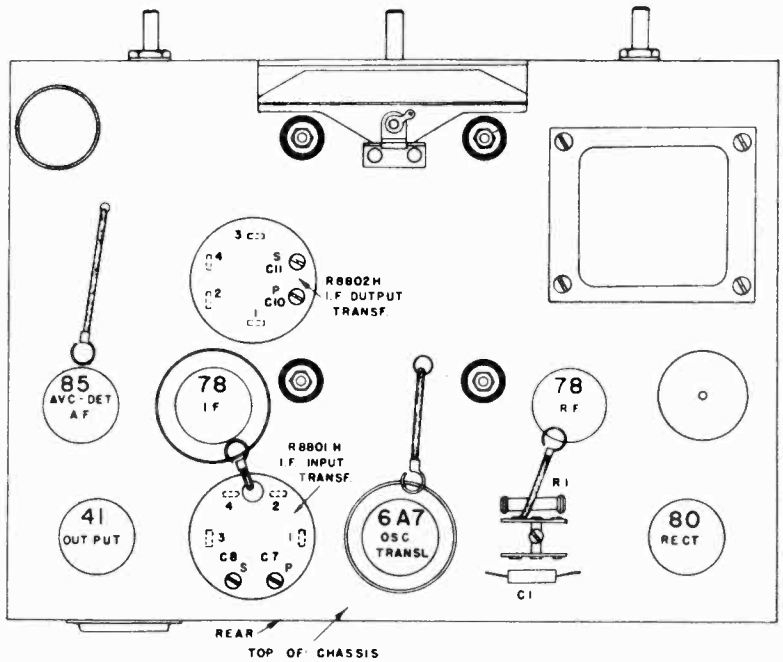


FIG. 67. SERVICE ILLUSTRATIONS - MODELS 600 and 600A

COLONIAL RADIO CORP.

SERVICE NOTES

MODEL 601

INTRODUCTION

The COLONIAL Model 601 is a ten tube superheterodyne with a parallel push pull output stage and a push pull driver stage. In addition to the broadcast range, there is a short wave range extending to 4600 kc. A separate sensitivity control permits matching the receiver to the reception conditions in any particular location.

The circuit is shown in block form in Fig. 68,and schematically in Fig. 69.

A 78 RF tube is used in the broadcast position only. For short wave reception, switch contacts #3 and #4 connect the antenna to the primary of L5. Its secondary is connected directly to the control grid of the 6A7 through switch contacts #1 and #2.

Coils L3 and L4 in series comprise the oscillator coil for broadcast reception. For short waves,Coil L3 is shorted out by switch contacts #7 and #8.

The 175 kc signal created in the plate circuit of the 6A7 oscillator-translator tube is transformer coupled to the 78 IF tube. Its output is transformer coupled to the 75 tube which provides AVC, diode detection and audio amplification. The audio output of the 75 is split up. Part of it is coupled directly to one pair of the parallel push pull '45 output tubes. The remainder is coupled to a '37 phase changer and thence to the other pair of '45's. The combination of the '37 phase changer and the triode portion of the 75 forms a push pull stage to drive the push pull output stage. A 12 inch dynamic speaker is used.

THE 75 AVC-DETECTOR-AF

The IF output is impressed between the cathode and the diode plates of the 75, in series with R5 and the 500 M ohms of the volume control. Diode current flows, creating a voltage drop across R5 and the volume control. The drop across the volume control is positive at the grounded end of the control, with reference to the other end. R5 serves only as a filter resistor. The grid returns of the RF, oscillator-translator, and IF tubes are connected to the volume control so that the negative bias across it is impressed upon the control grids of these tubes. An increase in signal strength increases the diode current,increases the drop across the volume control, increases the negative bias on the 6A7 and 78 tubes, and so decreases their amplification. Increases in signal strength are offset by decreases in tube amplification so that the input to the 75 tends to remain at a constant value.

The residual bias on the 78 RF and 6A7 tubes is controlled by the variable 1000 ohm "Power" or "Sensitivity" control. When all of its resistance is shorted out, maximum sensitivity is obtained.

The audio component of the voltage across the volume control is picked off by the moveable arm of the control and fed through C14 to the control grid of the triode portion of the 75 tube.

THE 75 - '37 PUSH PULL DRIVER

In any push pull circuit,the polarity of the signal voltage at the plate of one of the tubes must be opposite to that at the other tube. Ordinarily, a push pull transformer would be used to obtain the polarity opposition or phase change at the grids of the 45 output tubes. In the Model 601 circuit, this phase change is obtained as follows:

Suppose at some particular instant the signal voltage at the plate of the 75 tube is becoming increasingly positive. This voltage is applied directly through C20 to the grids of one pair of '45's. These grids then are positive. At the same time the positive voltage of the 75 is impressed upon the grid of the '37 phase changer tube through C18. As its grid becomes more positive,its plate current increases. This increase in plate current causes an increased voltage drop across R12, with the plate end of the resistor negative with respect to the other end. This negative voltage is fed through C19 to the grids of the other pair of '45's. Thus phase opposition is accomplished. Constants are so chosen that the signal voltage applied to the grids of one pair of '45's is equal to the signal voltage applied to the other pair.

MODEL 601
Voltage
Parts List

COLONIAL RADIO CORP.

PART NO.	DESCRIPTION
R-9315	Bezel - Sensitivity control
R-8297A	Board - Terminal, double
R-8308A	Board - Terminal, triple
R-9300	Cabinet
R-7011-A	Clip - Ant. and gnd. leads
R-6381	Clip - Grid
R-6381W	Clip - Grid with 7½" lead
R-7031	Clip - Pilot light
R-8504	Coil - Antenna
R-9046	Coil - Antenna short wave
R-8757	Coil - Translator
R-8728	Coil - Oscillator
R-9294	Coil - Oscillator, short wave
R-6565	Condenser - IF tuning
R-8759	Condenser - Variable
D-4758P	Condenser - 8 mfd. electrolytic
R-7236	Condenser - 14 mfd. electrolytic
R-9237	Condenser - 4 mfd. dry electrolytic
R-6451	Condenser - .5 mfd. 200 volt
R-6444	Condenser - .1 mfd. 200 volt
R-6761	Condenser - .02 mfd. 600 volt
R-7681	Condenser - .003 mfd. 600 volt
R-6461	Condenser - .003 mfd. 800 volt
R-6933	Condenser - .002 mfd. 600 volt
R-4303	Condenser - .0001 mfd. mica
R-6570	Control - Tone, Volume
R-8552	Control - Sensitivity
R-7566	Cord - Power Supply
R-9297A	Dial and Indicator
R-9311	Escutcheon
R-9301	Instruction leaflet
R-9314	Knob - Large
R-9312	Knob - Small
R-8520	Knob - Sensitivity control
R-2288	Lamp - Pilot
R-5346B	Lead - Antenna, with clip
R-5345A	Lead - Ground, with clip
R-5321	Pin - Escutcheon
R-6179	Resistor - 500 M ohms, 1/2 watt carbon
R-5822	Resistor - 400 M ohms, 1/2 watt carbon
R-5830	Resistor - 200 M ohms, 1/2 watt carbon
R-8683	Resistor - 150 M ohms, 1/2 watt carbon
R-5819	Resistor - 100 M ohms, 1/2 watt carbon
R-6210	Resistor - 75 M ohms, 1/2 watt carbon
R-6689	Resistor - 30 M ohms, 1 watt carbon
R-5821	Resistor - 20 M ohms, 1/2 watt carbon
R-8685	Resistor - 70 ohms, 3 watt, flexible
R-8684	Resistor - 8 ohms, 1 watt, flexible
R-6006B	Shaft - Dial drive assembly
R-6018A	Shield - Ant. & translator coils
R-7235	Shield - Electrolytic condenser
R-8687A	Shield - IF transformer
R-5323A	Shield - Tube, bottom
R-5322	Shield - Tube, top
R-8366	Socket - 4 prong
R-8367	Socket - 5 prong
R-8368	Socket - 6 prong
R-8369	Socket - 7 prong
S-9304C	Speaker - 12", 540 ohm
S-7606A	Speaker - Cone and voice coil
S-9320	Speaker - field coil
S-9090	Speaker - hum bucking coil
S-7415	Speaker - plug, 5 prong
S-7106	Speaker - ring, cone mounting
S-9321A	Speaker - transformer
R-9302	Sticker - Tube & license - 60 cycle
R-9303	Sticker - Tube & license - 25 cycle
R-6964	Switch - AC
R-8422	Switch - Wave
R-8782	Transformer - IF input (core and coils)
R-8782A	Transformer - IF input complete, less shield
R-8783	Transformer - IF output
R-8783A	Transformer - IF output, complete less shield
R-8677A	Transformer - 60 cycle power
R-8678A	Transformer - 25 cycle power

TUBE VOLTAGE AND CURRENT CHART

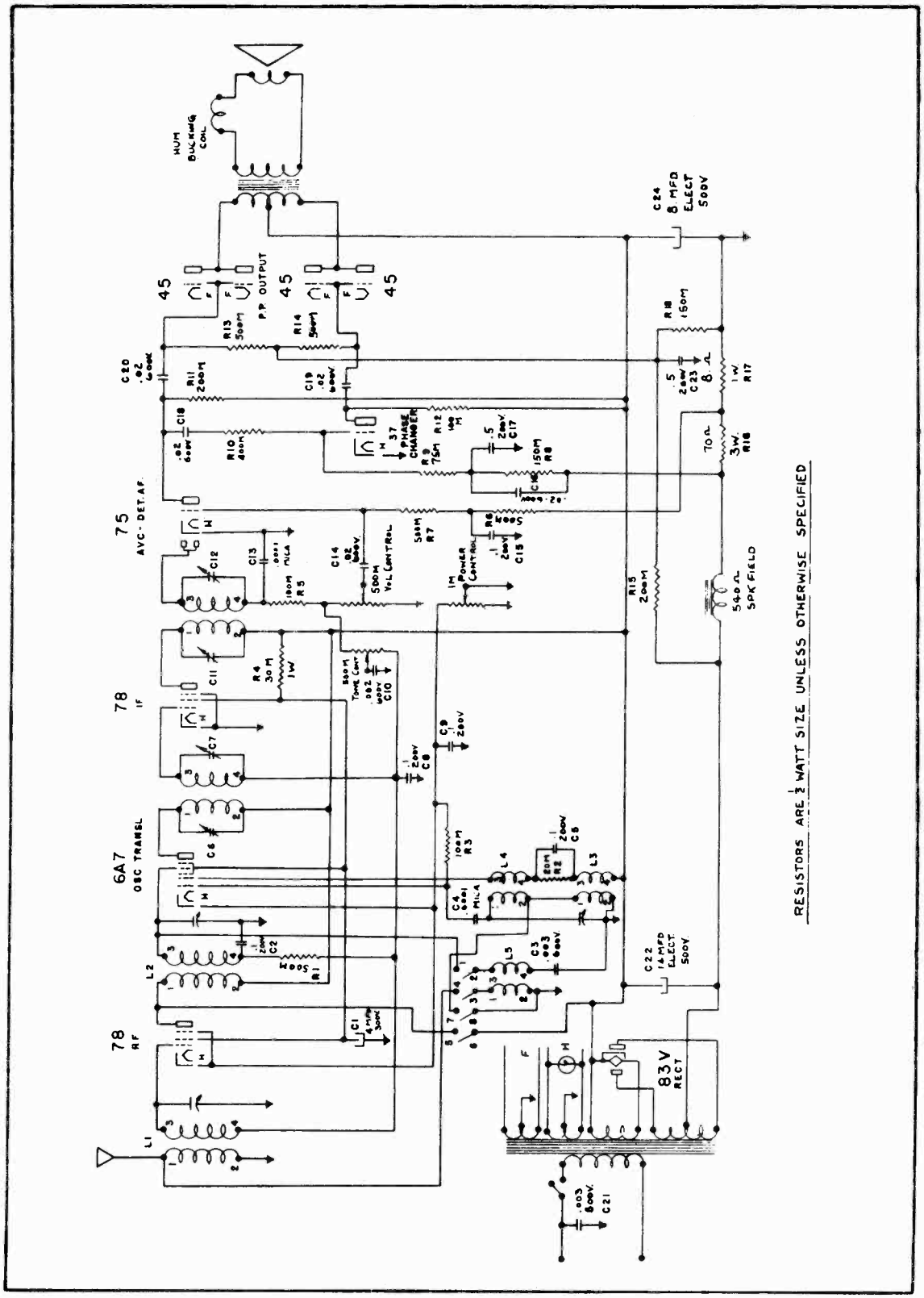
MODEL 601

TUBE	PLATE VOLTAGE	SCREEN VOLTAGE	PLATE M.A.	SCREEN M. A.
78 - R F	255	100	8	2
78 - I F	255	100	8	2
75 - AVC-Det-AF	125		.5	
'37 - Phase Changer	190		1.5	
'45 - Output	245		32	
6A7 - Osc-Transl	Ep = 255v; Eg#1 = -10v; Eg#2 = 200v; Eg#3&#5 = 82v; Ip = 3.75m.a.; Ig#2 = 3.5m.a.; Ig#3&#5 = 2.25m.a.			
83-V - Rect.	Maximum d.c. volts = 390v. Plate current = 84m.a. per plate			

Readings taken with 1000 ohms per volt meter; antenna and ground shorted together; volume control on full, and no signal received. Care must be used if measurements are made with an analyzer since the capacity of the cables may cause circuits to oscillate, giving rise to erratic readings. Usually, touching the finger to grid or plate is sufficient to stop oscillation.

MODEL 601
Schematic

COLONIAL RADIO CORP.

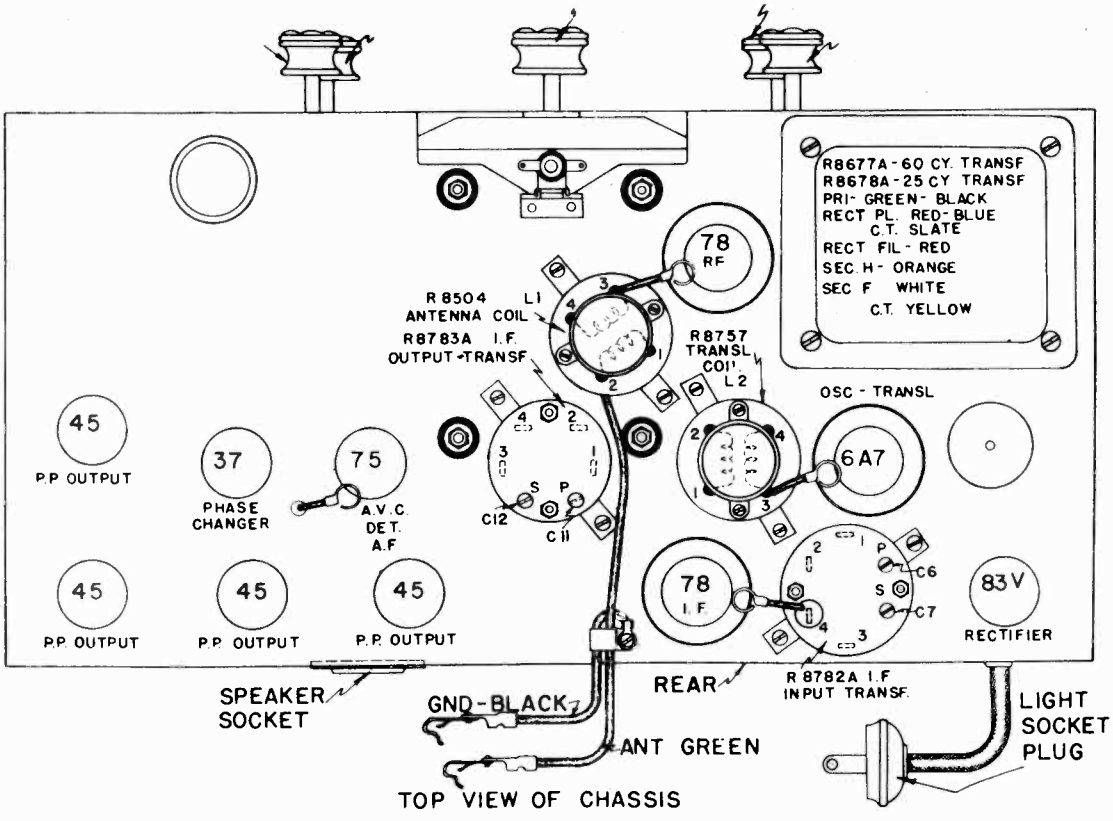


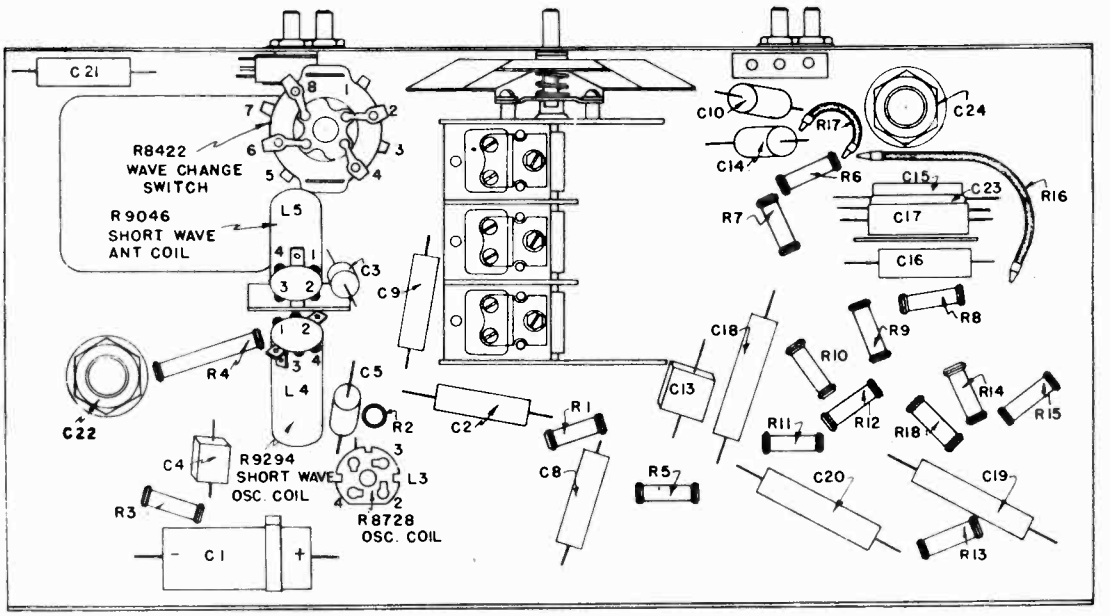
RESISTORS ARE ½ WATT SIZE UNLESS OTHERWISE SPECIFIED

FIG. 69. THE SCHEMATIC DIAGRAM - MODEL 601

MODEL 601
Parts location
Socket layout

COLONIAL RADIO CORP.





REAR
BOTTOM VIEW OF CHASSIS

FIG. 70. SERVICE ILLUSTRATIONS - MODEL 601

MODEL 700,701,702
Notes on circuit
Mechanical notes

COLONIAL RADIO CORP.

MODELS 700 - 701 - 702

THE AVC-DETECTOR-AF CIRCUIT

The AVC - Detector AF circuit is shown schematically in Fig. 45.

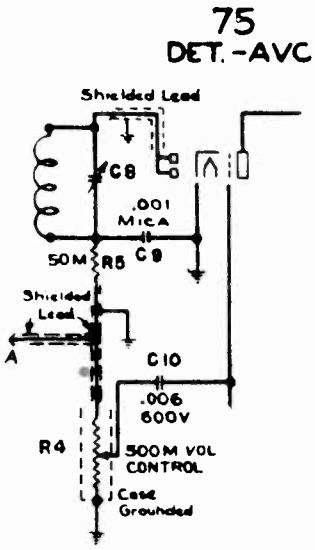


FIG. 45

The 175 kc signal at the IF output transformer secondary is impressed between the 75 tube's cathode and its diode plates, in series with the 500 M ohm volume control. Diode current flows, making point (A) negative with respect to ground. Since the translator and IF grid returns are connected to point (A), any increase in signal increases the drop across the volume control, increases the negative control grid bias on the 6A7 and 78, reduces their amplification, and so tends to maintain the signal at the IF output at a constant value.

Any desired portion of the AF component across the volume control resistance is picked off by the moving arm of the control, fed through the .006 condenser to the grid of the triode portion of the 75 tube. It is there amplified and fed to the output tube and then to the dynamic loudspeaker.

When peaking the IF transformers, use a low enough output from the test oscillator to render the AVC action inoperative.

Some of these receivers use wet electrolytics for C14 and C15 (part No. R9204); others use dry electrolytics almost identical in appearance(part No. R9397). If replacement of either of these condensers ever becomes necessary, use the R9397. The pre-selector coil may be bent out of the way to permit removal of the condensers.

The chassis and shafts are above ground potential, making it necessary to insulate the knobs and the equatorial ring from the shafts by means of fibre bushings. Note that the bushing in the knob is closed in on one end to prevent the end of the shaft from touching the knob. Be sure these insulating bushings are properly replaced after dis-assembling the Globe.

MECHANICAL ASSEMBLY OF THE RECEIVER

The receiver consists of six parts;

1. The upper half globe
2. The lower half globe
3. The chassis assembly
4. The goose neck
5. The base
6. The loudspeaker assembly

The top half globe is removed by unscrewing the acorn shaped ornamental nut and the knurled nut that it covers. The half globe then can be lifted off. Do not neglect to replace the felt washer on the mounting stud when putting the top half globe back into position.

The chassis can be removed from the bottom half globe by unscrewing the three screws that hold the equatorial ring, removing it, and then taking out the screws which mount the chassis to the tapped bosses moulded in the bottom half globe. Then remove the cable clamp and unsolder the wires from the terminal board, releasing the chassis.

To remove the bottom half globe, proceed as follows:

1. Unscrew the round jam nut. This can be done readily by inserting the ends of a pair of long nose pliers in the holes in the nut.

2. Unscrew the hexagonal adjusting nut.

3. Pry up the keyed stop washer.

4. The bottom half globe then can be pulled off of the gooseneck.

Should replacement of the bottom half globe be made, be sure to put the bracket on in its proper position. The stop which is punched in the bracket should face the side of the globe which has the EQUATION OF TIME CHART. Tighten the hexagonal nut only enough to secure the amount of tension needed for proper turning of the globe. If it is made too tight, the globe can not be rotated. After the hexagonal nut has been adjusted, tighten the round jam nut down on it. Do not allow the hexagonal nut to be turned by the jam nut.

MODEL 700,701,702
Voltage
Mechanical notes

COLONIAL RADIO CORP.

When ordering replacement half globes mention the color of the dot of paint on the inside of the globe. This daub of paint identifies the classification of the globe for matching purposes.

To remove the speaker assembly from the globe base, unscrew the six felt covered screws that hold the bottom plate. Then remove the two screws that bind the speaker assembly to the tapped bosses in the globe base.

To dis-assemble the globe base from the gooseneck, loosen the set screw in the hexagonal nut and then remove the nut. If replacement of the globe base is made, be sure the gooseneck is mounted in its proper position. It should face left when the back grille opening faces you. (The back grille can be identified by the notch cut in it for the power cord.) After tightening the hexagonal nut, drill a shallow hole in the bakelite for the setscrew point and then replace and tighten the setscrew.

If light shines through the crack between the two half globes, paint the pilot light bulb with black paint. Then scrape clear a window large enough and in the proper position to illuminate the dial.

If the terminal board on the chassis is removed, be sure to replace BOTH washers under the heads of each mounting screw when putting the board back in position. Otherwise the screws may project far enough to scrape the dial. Turn the dial slowly and carefully at first to be sure that it does not scrape.

The dial can be replaced without removing the drum from the chassis. Cut the celluloid away and clip the eyelets with a pair of diagnol pliers. Small screws and nuts can be used to mount the replacement dial. In a few cases it may be necessary to file some of the screw heads to insure sufficient clearance for the dial.

Do not use any kind of abrasive metal polish on any of the gold plated parts of the globe. Ordinary furniture polish, suggested in the Instruction Leaflet, will clean the metal parts as well as the moulded parts.

TUBE VOLTAGE AND CURRENT CHART

TUBE	PLATE VOLTS	SCREEN VOLTS	GRID VOLTS	PLATE M. A.	SCREEN M. A.
78 - IF	105	40	*	2.5	1
75 - AVC-Det-AF	55		*	.2	
43 - Output	90	105	-6*	19	3
6A7 - Osc-Transl	Ep=105v; Eg #2=105v; Eg #3&5=32v; Eg #4=*; Ip=.8ma; Ig #2-1.1ma; Ig #3&5=1ma.				
25Z5 - Rect.	Plate current - 38m.a. per plate				

* - Indicates high series resistance

Care should be used when taking readings with a set analyzer as the capacity of the cables may cause circuits to oscillate, giving rise to erratic readings. Usually, touching the finger to grid or plate is sufficient to stop oscillation. If an analyzer is not used, the voltage readings can be taken with a 1000 ohms per volt voltmeter, from cathode to the respective elements of each tube. Ordinarily, a 20% deviation from the chart value may be allowed.

If an analyzer is used to measure heater voltages, be sure a tube with heater intact is in the analyzer socket. Otherwise, the full line voltage will be across the heater prongs, possibly damaging the analyzer voltmeter.

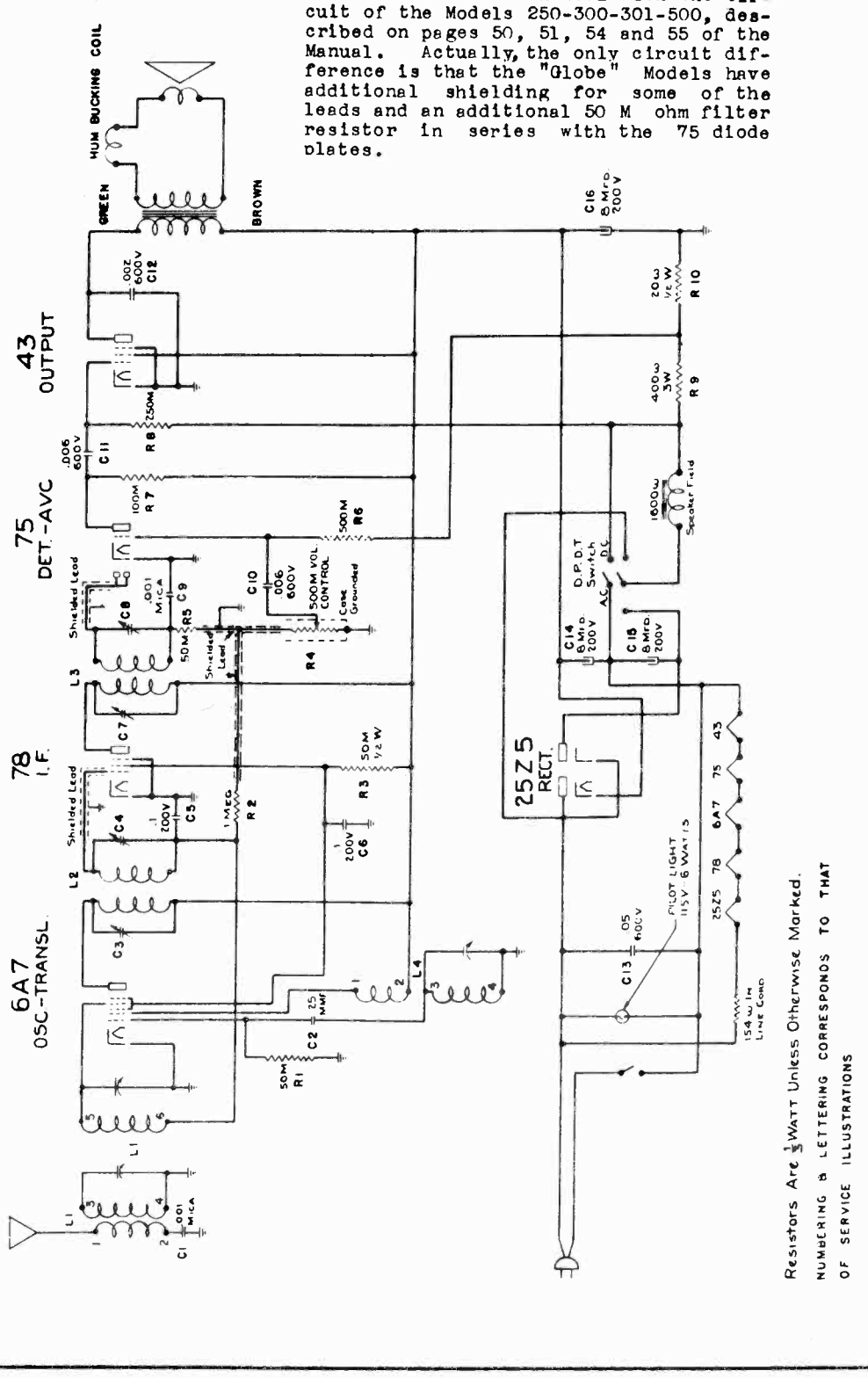
The heaters of the tubes are in series so that if one burns out, none will light. The others will light when the burned out tube is replaced.

An open power cord resistor also will prevent the tubes from lighting. This can be tested for by connecting a continuity meter between points 17 and 18 of the speaker terminal board. (The receiver must be disconnected from the line.) If no reading is obtained, the power cord is defective and should be replaced.

COLONIAL RADIO CORP.

MODEL 700,701,702
Schematic

The circuit of these AC-DC "Globe" models is almost identical with the circuit of the Models 250-300-301-500, described on pages 50, 51, 54 and 55 of the Manual. Actually, the only circuit difference is that the "Globe" Models have additional shielding for some of the leads and an additional 50 M ohm filter resistor in series with the 75 diode plates.



Resistors Are ½ Watt Unless Otherwise Marked.

NUMBERING & LETTERING CORRESPONDS TO THAT OF SERVICE ILLUSTRATIONS

FIG. 47. SCHEMATIC DIAGRAM - MODELS 700 - 701 - 702

MODEL 700,701,702
Chassis view
Parts List

COLONIAL RADIO CORP.

R-9168	Lamp - Pilot - 6 watt
R-9385BL	Lamp - Pilot - 3 watt (Ivory Globe only)
R-8987	Nut - Globe mtg.
R-9279	Nut - Globe Mtg. jam
R-8983	Nut - Knurled
R-9009	Nut - Base Mtg.
R-8937	Nut - Cap
R-8091	Plate - AC-DC switch
R-7585	Resistor - 1 megohm, 1/3 watt carbon
R-7228	Resistor - 500 M ohms, 1/3 watt Carbon
R-7584	Resistor - 250 M ohms, 1/3 watt carbon
R-7586	Resistor - 100 M ohms, 1/3 watt carbon
R-6637	Resistor - 50 M ohms, 1/3 watt carbon
R-6445	Resistor - 50 M ohms, 1/2 watt carbon

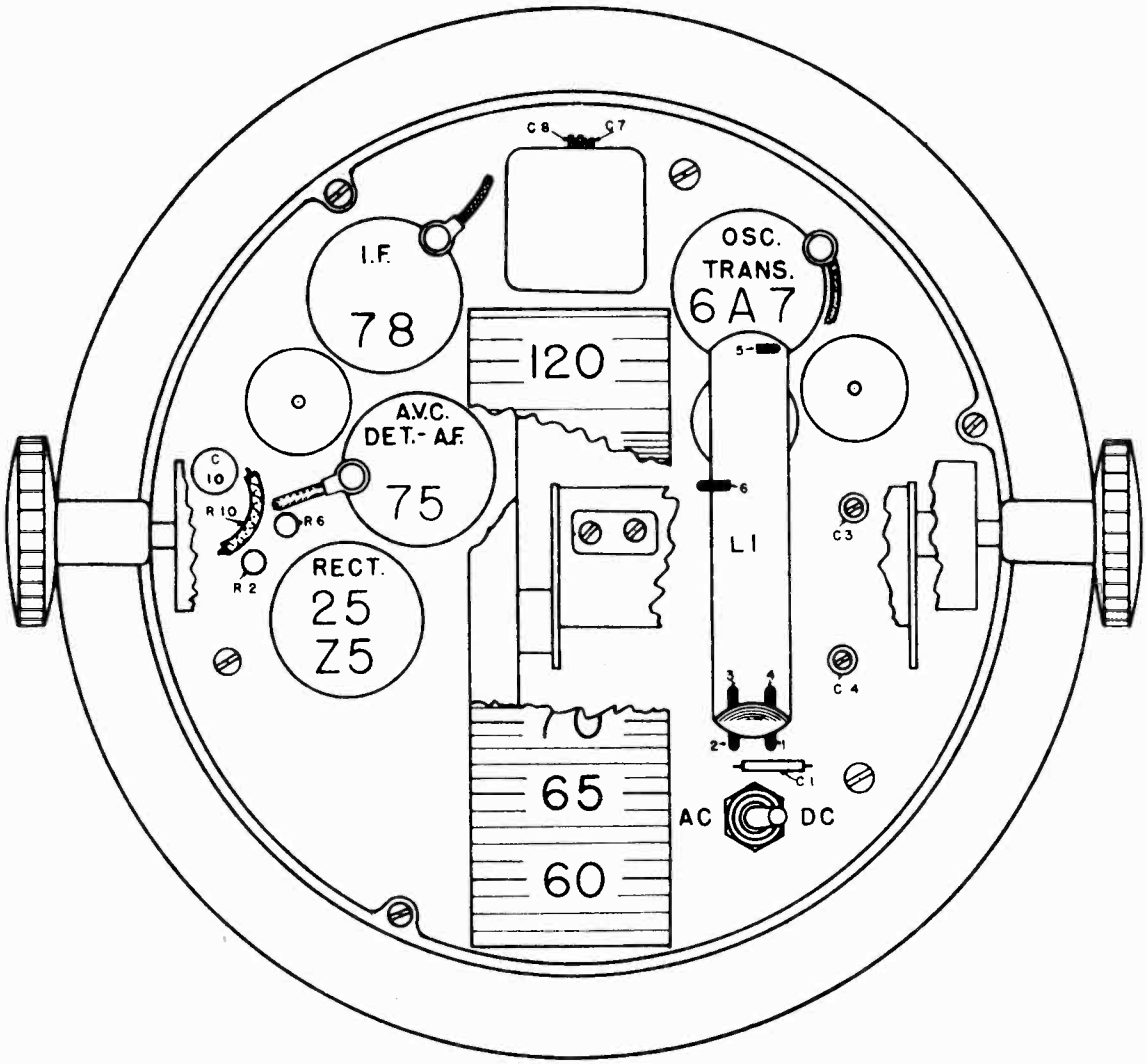
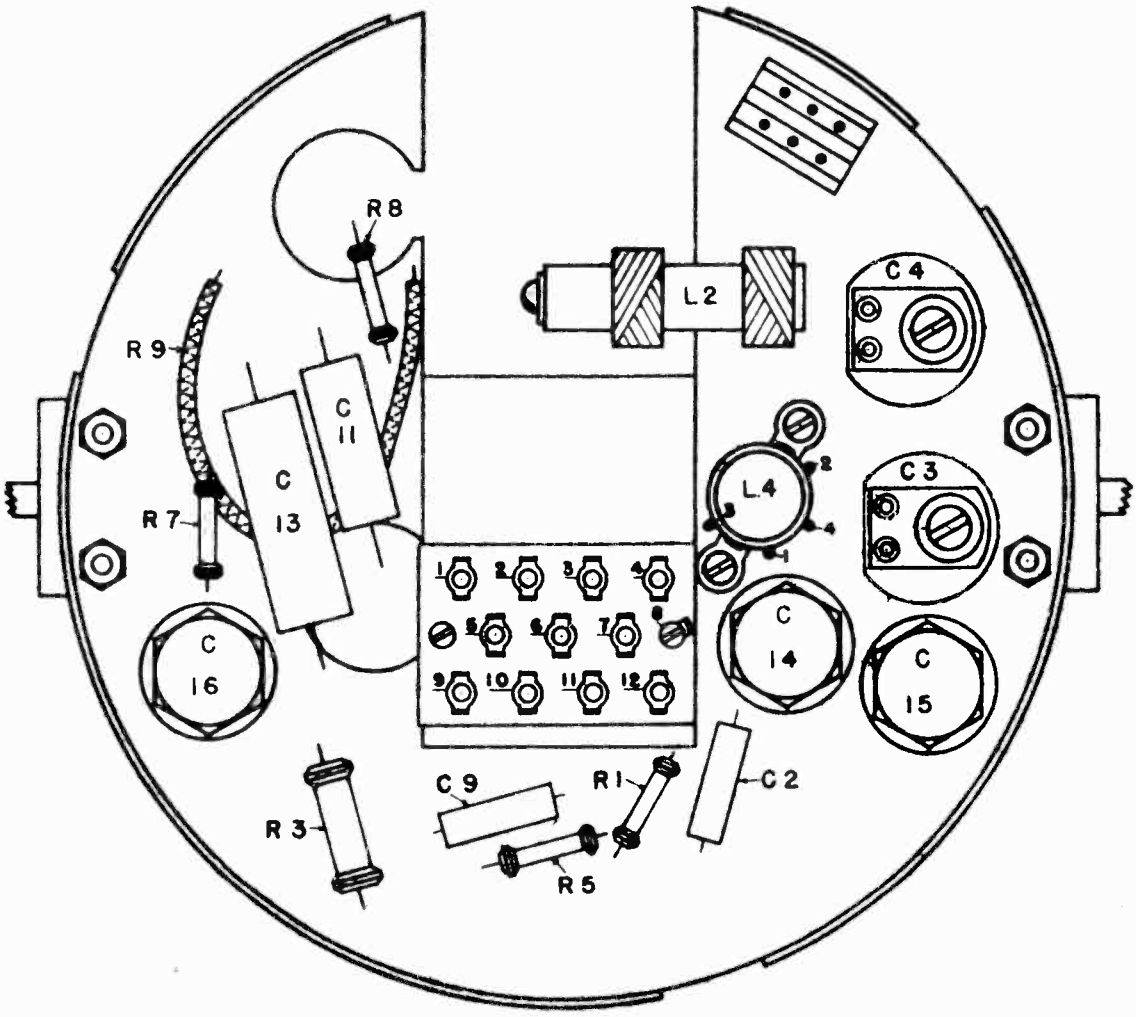


FIG. 48. TOP VIEW OF CHASSIS - MODELS 700 - 701 - 702

R-8990	Condenser - Variable tuning
R-8038	Condenser - IF tuning
R-9397	Condenser - 8 mfd. dry electrolytic
R-8301	Condenser - .1 mfd. 200 volt, dual
R-9145	Condenser - .05 mfd. 600 volt,
R-8056	Condenser - .006 mfd. 600 volt,
R-8055	Condenser - .002 mfd. 600 volt,
R-6759	Condenser - .001 mfd. mica
R-8711	Condenser - .000025 mfd. mica
R-8996	Control - Volume
R-9004	Cord - Maroon
R-9377	Cord - Ivory
R-9378	Cord - Black
R-9005A	Cover - Bottom
R-9064	Dial - Time
R-9012	Felt washer
R-9281	Foot - Felt covered, base
R-8927	Globe - Top, Maroon
R-8923	Globe - Bottom, Maroon
R-9373	Globe - Top, Ivory
R-9375	Globe - Bottom, Ivory
R-9374	Globe - Top, Black
R-9376	Globe - Bottom, Black

COLONIAL RADIO CORP.

MODEL 700,701,702
Parts location



1----TO 43 TUBE HEATER
2---TO 43 TUBE GRID
3-- + FIELD
4-- — FIELD
5---TO JUNCTION OF PLATE & CATHODE OF 25Z5 TUBE
6---GROUND & 43 TUBE'S CATHODE
7---ANTENNA
8---GROUND
9---"ON-OFF" SWITCH
10---OTHER SIDE OF "ON-OFF" SWITCH & OTHER 43 HEATER PRONG
11---TO 25Z5 HEATER
12--TO 43 TUBE'S SCREEN

FIG. 49. UNDER VIEW OF CHASSIS - MODELS 700 - 701 - 702

MODEL 700,701,702
Parts List
Terminal board data

COLONIAL RADIO CORP.

R-9030A	Antenna - Maroon
R-9379A	Antenna - Ivory
R-9380A	Antenna - Black
R-8935	Base - Globe, Maroon
R-9371	Base - Globe, Ivory
R-9372	Base - Globe, Black
R-8297A	Board - Terminal, single
R-8308A	Board - Terminal, double
R-8994A	Board - Terminal, chassis
R-9003	Bracket - Globe support
R-9407	Cable - Chassis to Speaker
R-6718	Clamp - Cable
R-8048	Clip - Antenna
R-6381	Clip - Grid
R-6381AH	Clip - Grid with shielded lead
R-9057	Coil - Oscillator
R-8995	Coil - Pre-Selector
R-8940	Ring - Equatorial
R-2284	Screw - Set, knobs
R-9453	Screw - Set, dial
R-8524	Shield - Electrolytic Condenser
R-8092	Socket - 6 prong
R-8072	Socket - 7 prong
R-2414	Spacer - Terminal Board Mtg.
R-8076	Switch - AC-DC
S-9451	Speaker
S-9080	Speaker field coil
S-9450A	Speaker - Cone & Voice Coil
S-8640	Speaker - Clamping ring
S-8641	Speaker - Clamping ring
S-8666	Speaker - Suspension spacer
S-8343A	Speaker - Terminal board (3)
S-9068A	Speaker - Terminal board (8)
S-8674	Speaker - Hum bucking coil
S-9449A	Speaker - Transformer
R-9045	Sticker - Tube layout
R-8039A	Transformer - IF input
R-9002A	Transformer - IF output
R-4794	Washer - Insulating - Volume Control
R-8533	Washer - Insulating - Electrolytic Condenser

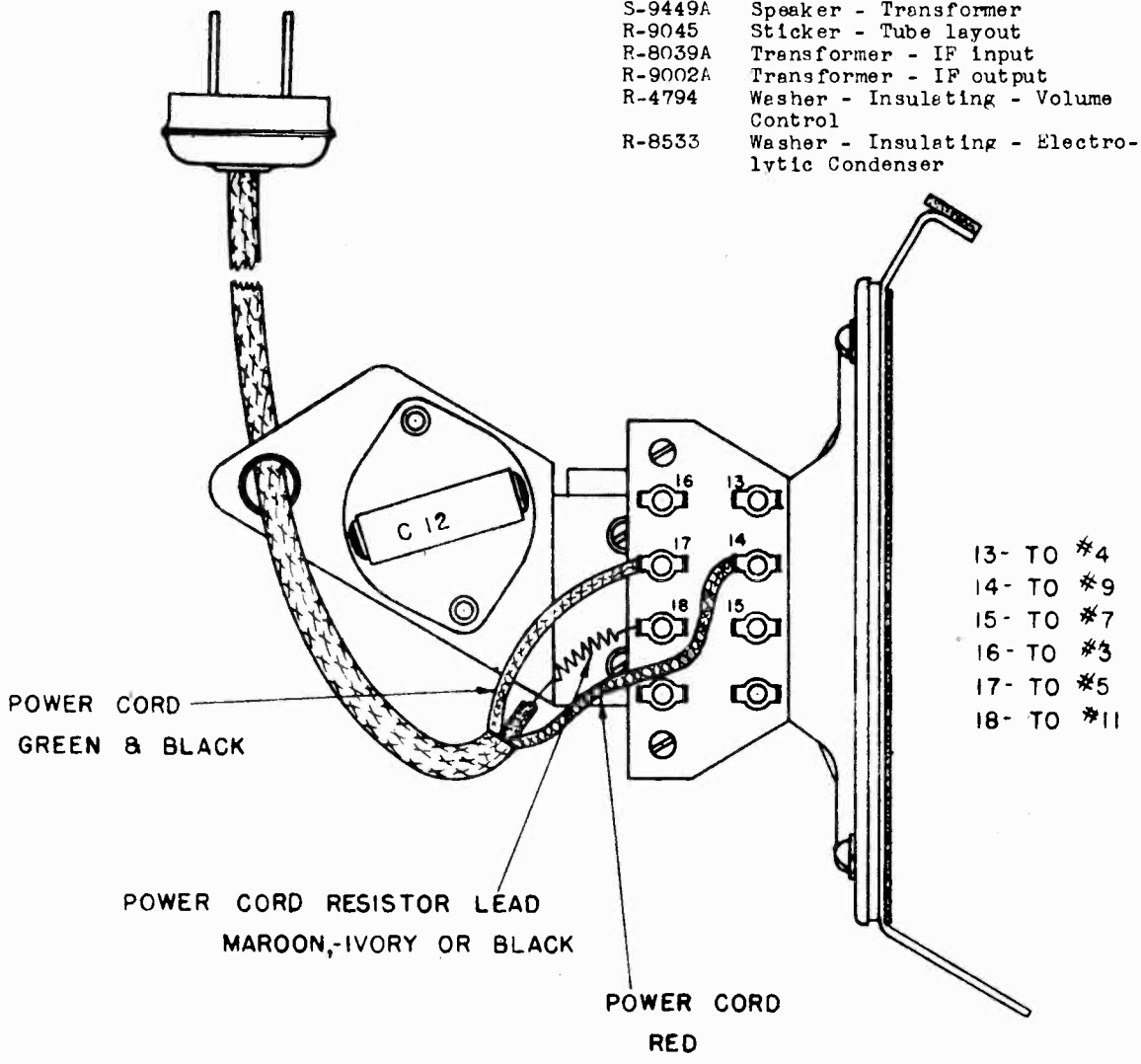


FIG. 50. SPEAKER TERMINAL BOARD CONNECTIONS - MODELS 700 - 701 - 702

COLONIAL RADIO CORP.

MODEL 700 AC, 701 AC, 702 AC
Circuit notes
Voltage

SERVICE NOTES

MODELS 700AC - 701AC - 702AC

These AC "Globe" receivers are five tube superheterodynes with a frequency range extending to 2480 kc.

A 6A7 pentagrid converter fills the function of oscillator and of translator. The 175 kc signal created in its plate circuit is amplified by the 78 IF stage and then coupled to the 75 tube. Diode detection, AVC action and hi mu audio amplification are all obtained from the 75. Its audio output is amplified by the 41 power output pentode and then fed to the dynamic loudspeaker. An 84 rectifier is used.

THE 75 AVC - DETECTOR - AF CIRCUIT

The IF signal is impressed between the diode plates and the cathode of the 75 tube, in series with the 500 M ohm volume control and the 50 M ohm resistor. Diode current flows through the volume control and resistor creating a voltage drop across them with the grounded end of the volume control positive with respect to the grid return end of the 50 M ohm resistor. Since 6A7 and 78 grid returns are connected to the 50 M ohm resistor, the negative potential due to diode current is impressed upon the grids of these tubes. An increase in signal strength increases the diode current, increases the negative bias on the 6A7 and 78, reduces their amplification and so tends to maintain the input to the detector at a constant value since signal strength increases are offset by tube amplification decreases.

The audio component across the volume control is picked off by the move-

The audio component across the volume control is picked off by the moveable arm and fed through the .006 condenser to the control grid of the triode portion of the 75, where it is amplified.

The mechanical assembly of the globe is identical with that of the Models 700 -701-702 AC-DC globes, described on pages 81 and 82.

TUBE VOLTAGE AND CURRENT CHART

TUBE	PLATE VOLTS	SCREEN VOLTS	GRID VOLTS	PLATE M. A.	SCREEN M. A.
78 - IF	185	65	*	4	1
75 - AVC-Det-AF	105		*	.75	
41 - Output	175	185	-10*	17	2.5
6A7 - Osc-Transl	Ep=185v; Eg #2=185v; Eg #3&5=60v; Eg #4=*; Ip=2.5ma; Ig #2=2.75mc;				
84 - Rect	Plate current = 15m.a. per plate; DC voltage = 275.				

* - Indicates high series resistance.

Care should be used when taking readings with a set analyzer as the capacity of the cables may cause circuits to oscillate, giving rise to erratic readings. Usually, touching the finger to grid or plate is sufficient to stop oscillation. If an analyzer is not used, the voltage readings can be taken with a 1000 ohms per volt voltmeter, from cathode to the respective elements of each tube. Ordinarily, a 20% deviation from the chart value may be allowed.

MODEL 700 AC, 701 AC,
702 AC
Schematic

COLONIAL RADIO CORP.

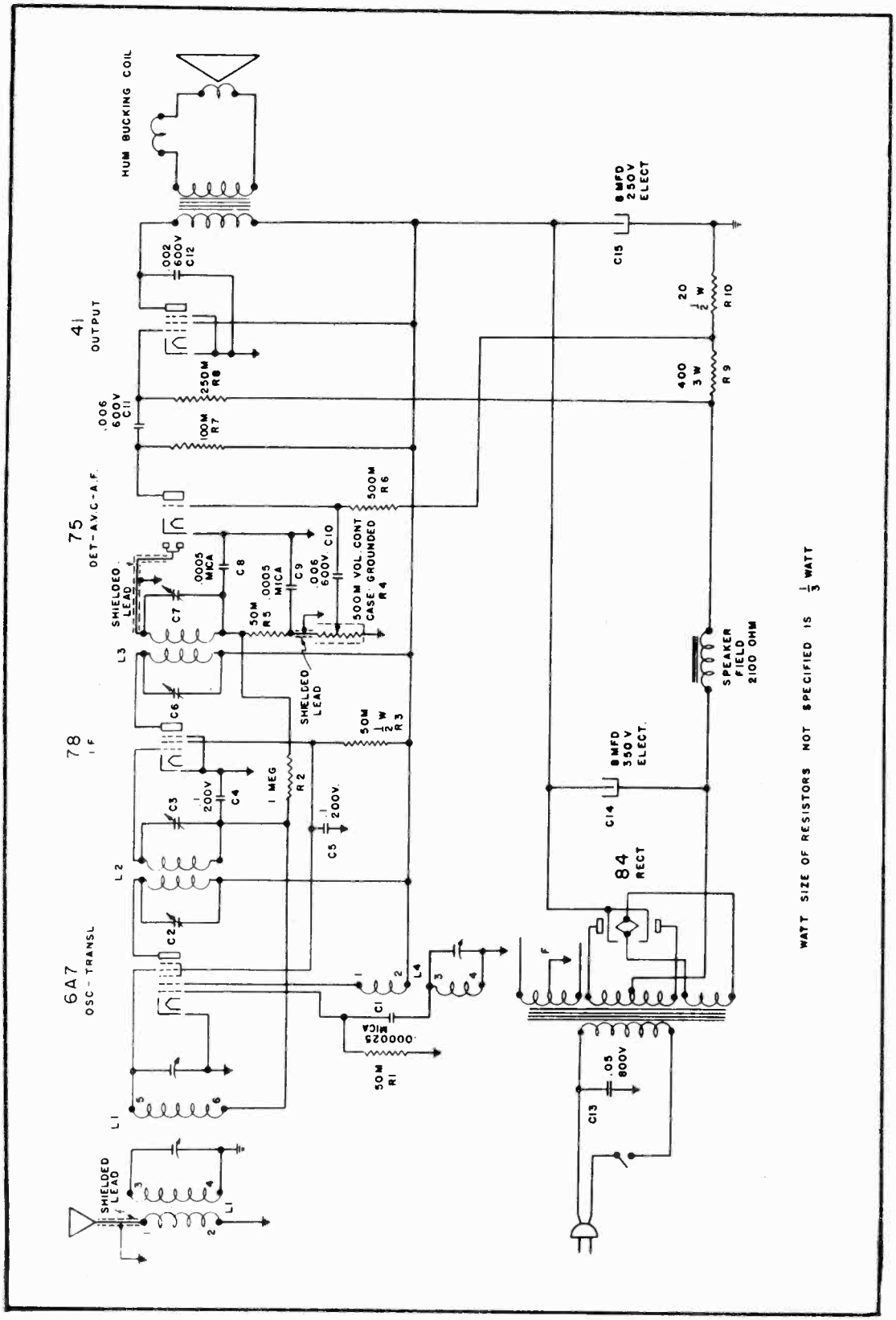


FIG. 55. THE SCHEMATIC DIAGRAM - MODELS 700AC - 701AC - 702AC

COLONIAL RADIO CORP.

MODEL 700 AC, 701 AC, 702 AC
Parts location
Speaker terminal data

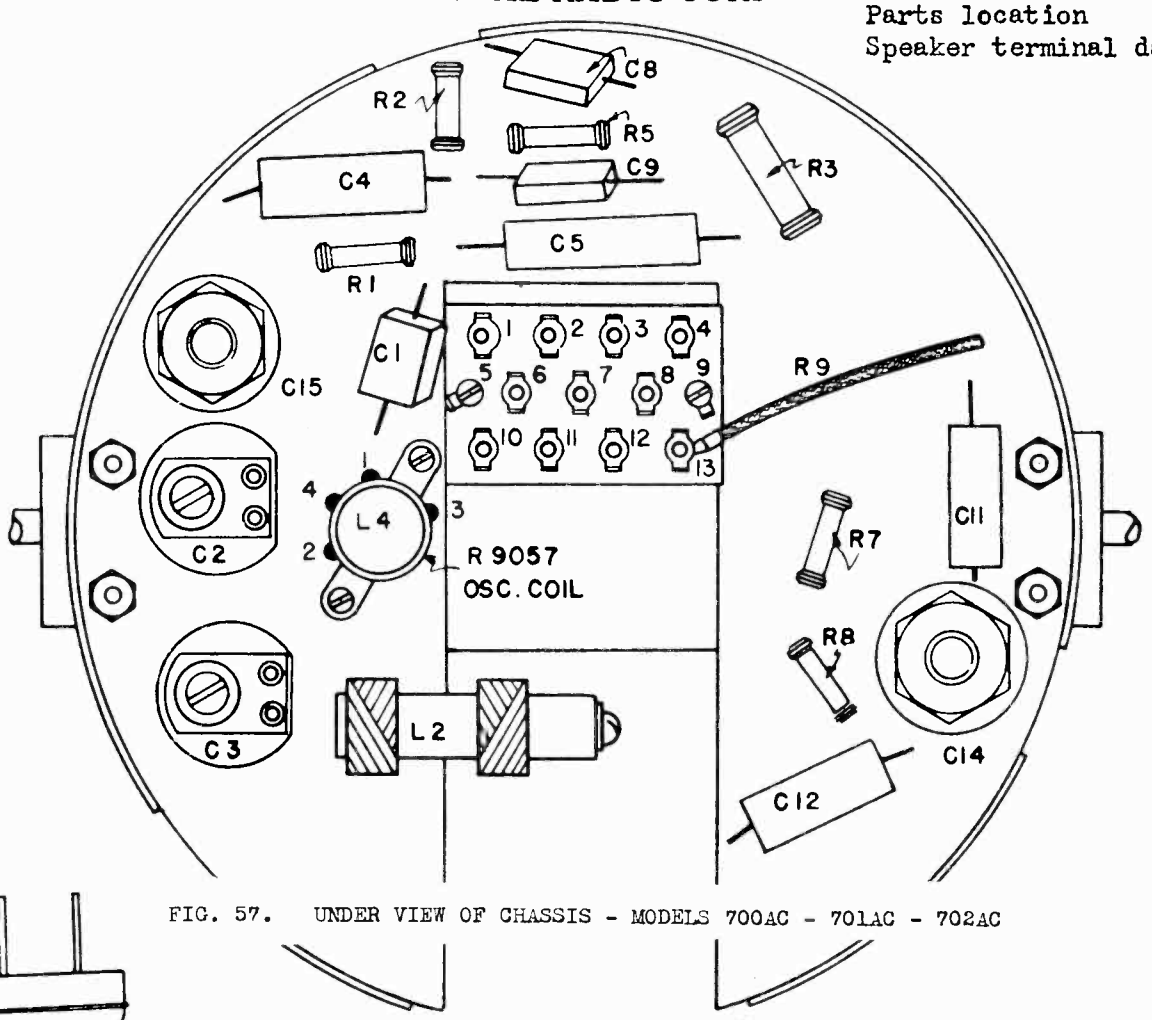


FIG. 57. UNDER VIEW OF CHASSIS - MODELS 700AC - 701AC - 702AC

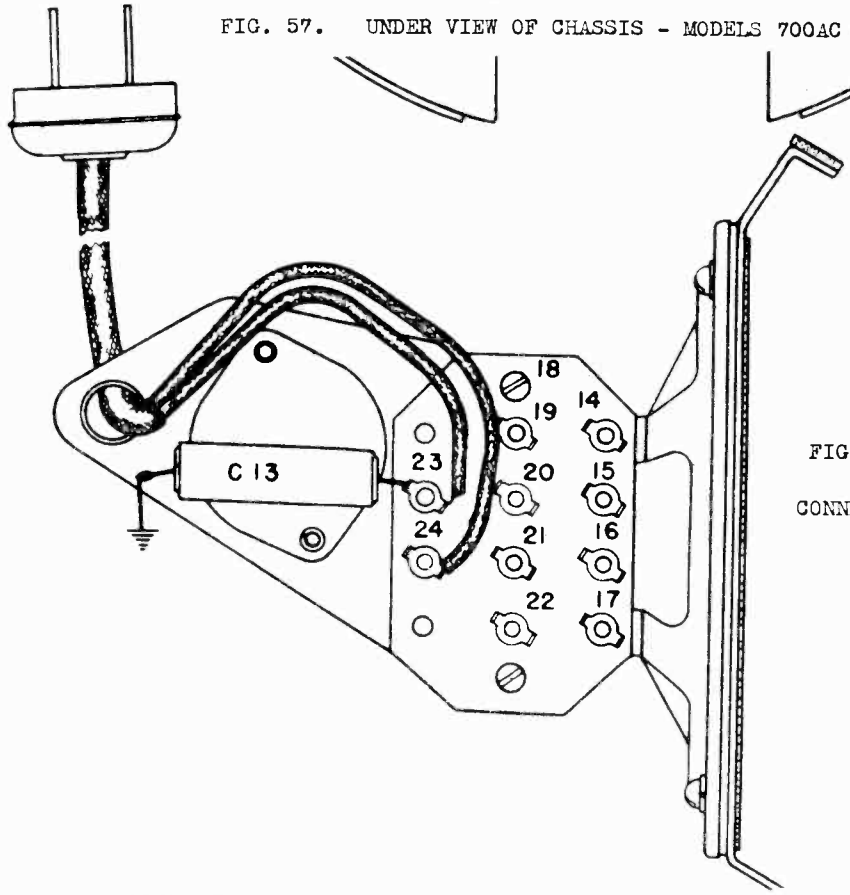


FIG. 58. SPEAKER TERMINAL BOARD CONNECTIONS - MODELS 700AC - 701AC - 702AC

MODEL 700 AC, 701 AC,
702 AC

COLONIAL RADIO CORP.

Socket layout

Parts List

R-7585	Resistor - 1 megohm, 1/3 watt carbon
R-7228	Resistor - 500 M ohms, 1/3 watt carbon
R-7584	Resistor - 250 M ohms, 1/3 watt carbon
R-7586	Resistor - 100 M ohms, 1/3 watt carbon
R-6637	Resistor - 50 M ohms, 1/3 watt carbon
R-6445	Resistor - 50 M ohms, 1/2 watt carbon
R-8562	Resistor - 400 ohms, 3 watt flexible
R-8491	Resistor - 20 ohms, 1/2 watt flexible
R-8624	Condenser - 8 mfd. 300 volt electrolytic
R-9204	Condenser - 8 mfd. 200 volt electrolytic
R-8990	Condenser - Variable tuning
R-8038	Condenser - IF tuning
R-8286	Condenser - .1 mfd. 200 v.
R-8443	Condenser - .05 mfd. 800 v.
R-8056	Condenser - .006 mfd. 600 v.
R-8055	Condenser - .002 mfd. 600 v.
R-6760	Condenser - .0005 mfd. mica
R-8711	Condenser - .000025 mfd. mica

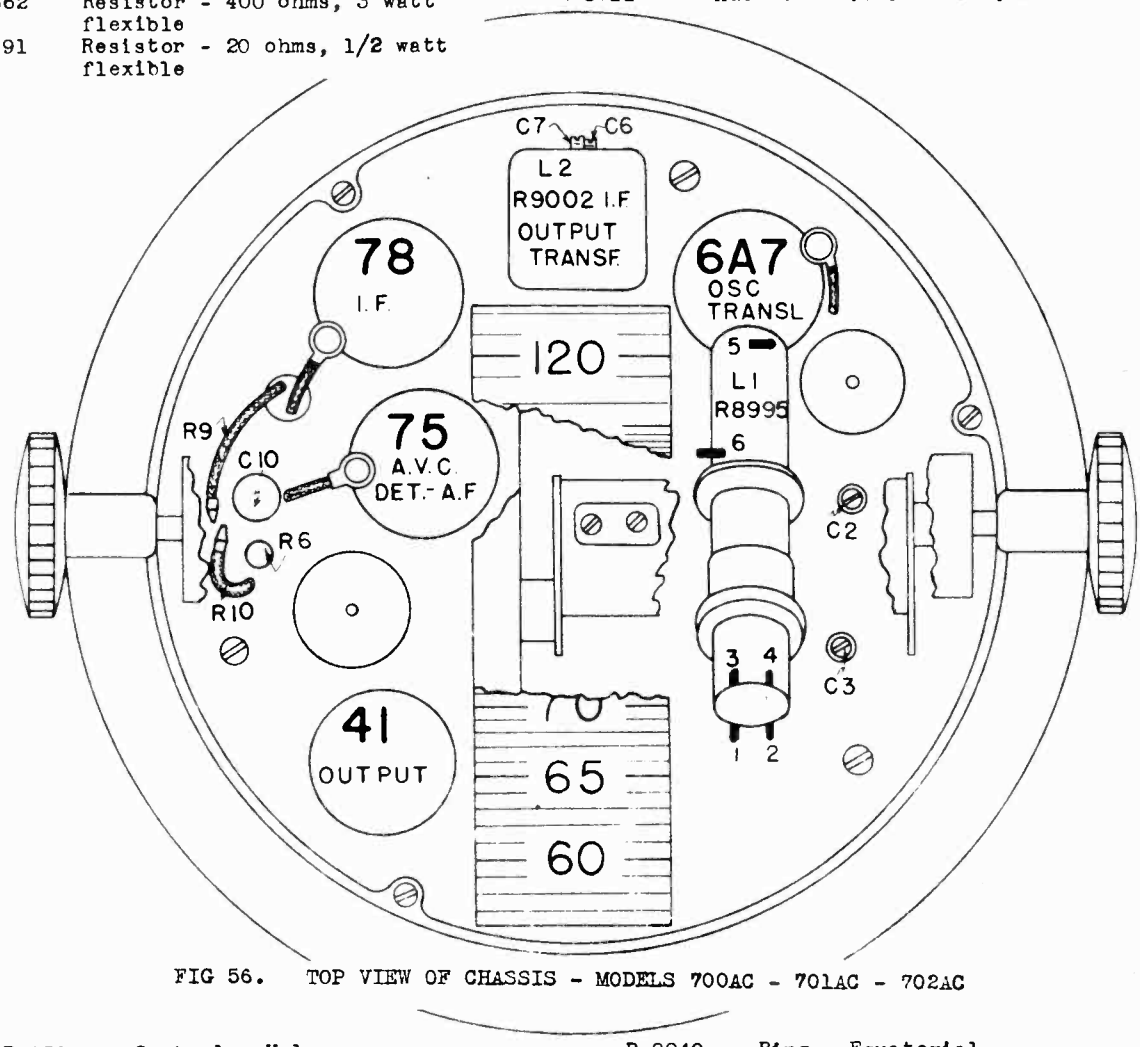


FIG 56. TOP VIEW OF CHASSIS - MODELS 700AC - 701AC - 702AC

R-9396	Control - Volume
R-9362	Cord - Power (Maroon)
R-9382	Cord - Power (Gold)
R-9383	Cord - Power (Black)
R-9005	Cover - Bottom
R-9064	Dial - Time
R-9281	Foot - Felt covered
R-8927	Globe - Top (Maroon)
R-8923	Globe - Bottom (Maroon)
R-9373	Globe - Top (Ivory)
R-9375	Globe - Bottom (Ivory)
R-9374	Globe - Top (Black)
R-9376	Globe - Bottom (Black)
R-8997	Indicator - Station Selector (Maroon)
R-9381	Indicator - Station Selector (Gold)
R-8940	Ring - Equatorial
R-8625	Shield - Electrolytic cond.
R-9360	Shield - Tube
R-8092	Socket - 6 prong
R-8072	Socket - 7 prong
S-9363-A	Speaker - complete
S-9450-A	Speaker - Cone and Voice Coil
R-9368	Speaker - field coil
R-8674	Speaker - hum bucking coil
R-8640	Speaker - cardboard clamping ring
S-8641	Speaker - cardboard clamping ring
S-9386-A	Speaker - Terminal board
S-9454-A	Speaker - Transformer
R-8039	Transformer - IF input
R-9002	Transformer - IF output
R-9356-A	Transformer - Power, 60 cycle

COLONIAL RADIO CORP.

MODEL T-345, C-399, C-995
Speaker replacement Notes, Parts List

REPLACING THE CONE IN S-7592AC SPEAKERS USED IN MODEL C-995, AND S-7804AC SPEAKERS USED IN MODELS T-345 & C-399

1. Rip out the old cone thereby making it easy to get at the three suspension mounting screws.
2. Unsolder the voice coil leads from the terminal strip.
3. Remove the three suspension mounting screws.
4. Drill out the cone mounting eyelets or cut off the small head ends with a chisel and hammer. If care is used, the cardboard mounting rings will not be damaged.
5. Remove the cone and blow out any dirt from the air gap.
6. Put the three metal spacer blocks back in position.
7. Put the three suspension clamps and mounting screws in position in the spider and replace the cone and cardboard mounting rings in their original order. The eyeleting tool illustrated is recommended.
8. Screw up the suspension mounting screws by hand. Leave them loose enough so that the suspension can be shifted around.
9. Insert four strips about 3" long, 1/8" wide and .1" thick (cut from a calling card) between the inside of the voice coil and the pole stem. They should be evenly spaced around the pole stem.
10. Tighten the three suspension mounting screws with a 5/16" open end wrench.
11. Replace the eyelets around the edge of the cone, leaving four holes blank for the speaker to baffle mounting screws.
12. Solder the voice coil leads to the terminal strip lugs.
13. Remove the four spacer strips.
14. If it should happen that the cone is not properly centered after the replacement, loosen the three suspension mounting screws and move the cone around until proper centering is secured. Then re-tighten the screws. Sometimes several attempts are necessary before proper centering can be had.

Replacement Parts For The S-7592AC Speaker Are:

PART NO.	DESCRIPTION	NUMBER REQUIRED
S-7106	Cardboard Mounting Ring	3
S-7606A	Cone and Voice Coil Assembly	1
S-7174	Eyelet	14
S-8033	Eyeleting Tool	1

Replacement Parts For The S-7804AC Speaker Are:

PART NO.	DESCRIPTION	NUMBER REQUIRED
S-7769	Cardboard Mounting Ring	1
S-7770	Cardboard Mounting Ring	2
S-7776A	Cone and Voice Coil Assembly	1
S-7789	Eyelet	8
S-8033	Eyeleting Tool	1

MODEL T-397, C-495,
C-595, C-695
Speaker replacement
Notes, Parts List

COLONIAL RADIO CORP.

REPLACING THE CONE IN S-6294AC SPEAKERS USED IN MODELS T-397, C-495, C-595 & C-695

1. Unsolder the voice coil leads from the terminal strip.
2. Remove the cone mounting screw and washers.
3. Drill out the cone mounting eyelets or cut off the small head ends with a chisel and hammer. If care is used, the cardboard mounting rings will not be damaged.
4. Remove the cone and blow out any dirt from the air gap.
5. Replace the new cone and the cardboard mounting rings in their original order.
6. Insert three strips about 3" long, 1/8" wide and .01" thick (cut from a calling card) between the inside of the voice coil and the pole stem. They should be spaced evenly around the pole stem.
7. Replace and tighten the cone mounting screw and washers.
8. Replace the eight eyelets around the edge of the cone, leaving four holes blank for the speaker to baffle mounting screws. The eyeleting tool illustrated is recommended.
9. Remove the three inserted spacer strips.
10. Solder the voice coil leads to the two outside lugs of the three on the terminal strip.
11. If it should happen that the cone is not properly centered after completing the replacement, loosen the cone mounting screw until proper centering is secured. Then retighten the screw. Sometimes several attempts are necessary before proper centering can be had.

Replacement Parts Are:

PART NO.	DESCRIPTION	NUMBER REQUIRED	PRICE
S-6299	Cardboard Mounting Ring	2	.06 each
S-6300A	Cone and Voice Coil Assembly	1	1.14 each
S-6311	Eyelet	8	.53 per 100
R-4329	Lockwasher for R-4868	1	.03 per 10
R-4868	Screw, Cone mounting	1	.03 per 10
R-5496	Washer, Flat	1	.03 per 10
S-8033	Eyeleting Tool	1	3.25 each

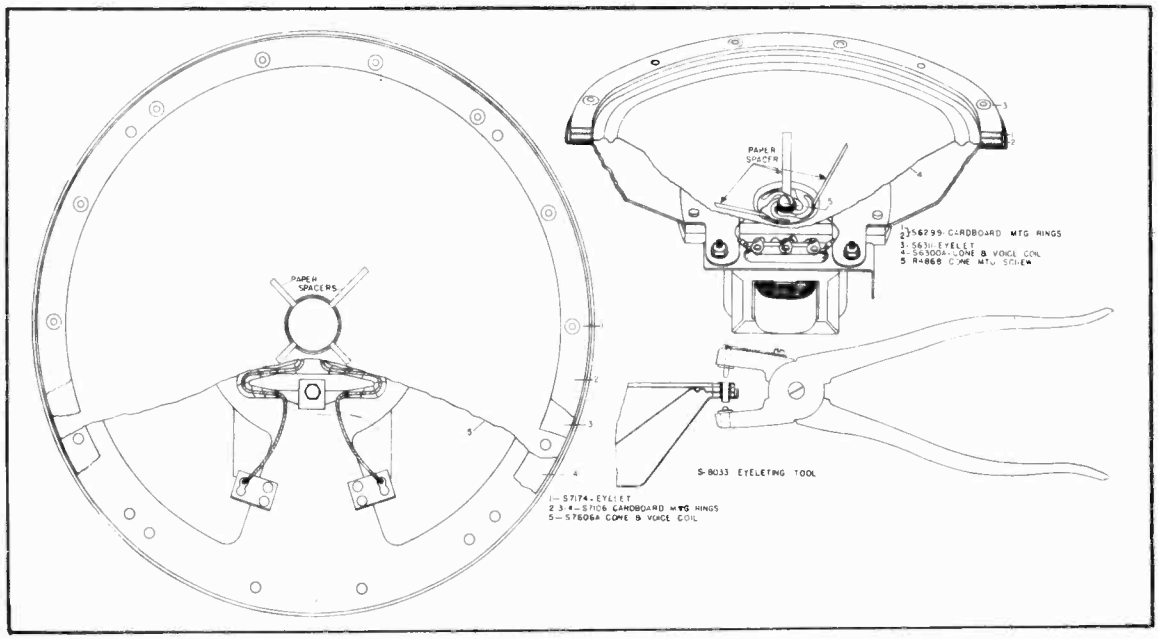


FIG. 21. CONE REPLACEMENT ILLUSTRATIONS

CROSLEY RADIO CORP.

MODEL 10
Schematic
MODEL 38
Schematic

1	G2-30173	ANTENNA COIL
2	G1-30173	OSC. COIL
3	B-30079	VAR. CONDENSER
4	B-30192	1-17 SWITCH
5	G2-29699	6-14 TRIMMER COMP.
6	~~W-29660-A~~	~~COND. COMPLETE~~
7	24677	3 MEG RESS.
8	~~W-29693-A~~	~~COND. .1 MFD. 200V.~~
9	21875	100,000 Ω RES. 5.
10	W-28619	COND. (.006 MFD.) 200V.
11	~~G1-30044~~	~~OSCILL~~
12	LW-30113	SHIELDED LEAD
13	W-28619	COND. (.006 MFD.) 200V.
14	21896	10,000 Ω RES. 6
15	21227-A	60,000 Ω RES. 6
16	G1-28884	PADDING COND.
17		PADDING COND.
18	W-30180	COND. (.001 (2 MFD.) 200V.
19	W-27689-A	CORD + PLUG
20	G1-30078	AC RECEPTACLE
21	W-30081	SWITCH DPDT
22		SWITCH SPST.
23	W-27676	COND. 4MFD. 150V.
24		COND. 4MFD. 150V.
25	G6-28168	FILTER CHOKE
26	~~W-28864-A~~	~~300-30 Ω RESIS~~
27	W-4099A	DIAL LAMP 6V.
28	LW-30166	ANT. GND. TERM.
29	G38-27975	SOCKET '77
30	G12-27976	SOCKET '37
31	~~G4-24628~~	~~RECTIFIER CHOKE~~
32	G3-24284	R.F. CHOKE
33	W-28619	.006 MFD. COND. 200V.
34	W-1847A	COND. (.000 MFD.) 200V.
35	W-28864-B	300-75 Ω RES.
36	W-30488	COND. .02 MFD. 400 V.
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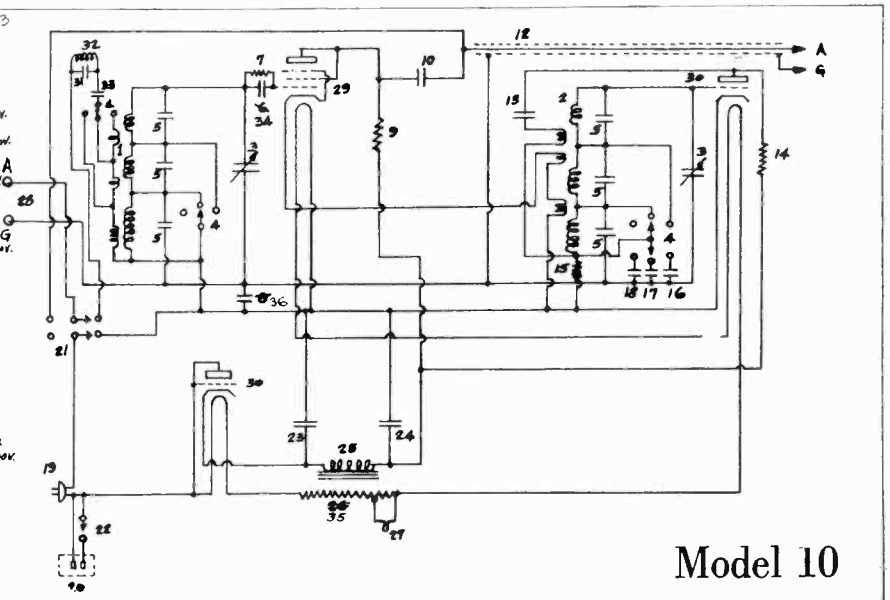

Model 10

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64			80		
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78			94		

RECORD OF CHANGES

		Change No.
A	ITEM 6 REPLACED WITH ITEM 34. 7-15-33 CHANGE	3491
B	ITEM 26 REPLACED BY ITEM 36 8-4-33 EFF. 8-7-33 (CHG.)	3485
C	ITEM 9 REPLACED BY ITEM 26	

THE CROSLEY RADIO CORPORATION, CINCINNATI, OHIO

10 WIRING DIAGRAM

DRAWN	DATE	APPROVED	DWG. NO.
7-16-32	6/16/33	ADB	B-30102

1	W29951	A 57 CORD
2	~~W-29952~~	~~.27 Ω RESIS~~
3	~~W-29953~~	~~26 Ω RESIS~~
4	G51-28807	2525 SOCKETS
5	W-4093A	PILOT LIGHT
6		~~40 MFD. 150 V.~~
7	W-29806C	~~40 MFD. 100 V.~~
8		~~40 MFD. 150 V.~~
9	G2-24628	R.F. CHOKE
10	~~G-24333~~	~~TERM. BOARD~~
11	G1-24393	TERM. BOARD
12	~~W-29804~~	~~SWITCH~~
13	W29755	CORD & SPKR PLUG
14	W-29806A	16 MFD. 125 V.
15		16 MFD. 100 V.
16	W-30119	CABLE
17	W28607-A	SWITCH
18	G4-24393	TERM. BOARD
19	W-29592A	.008 MFD. 400 V.
20	W-29953-A	186.5 Ω RESIS.
21		26.9 Ω RESIS
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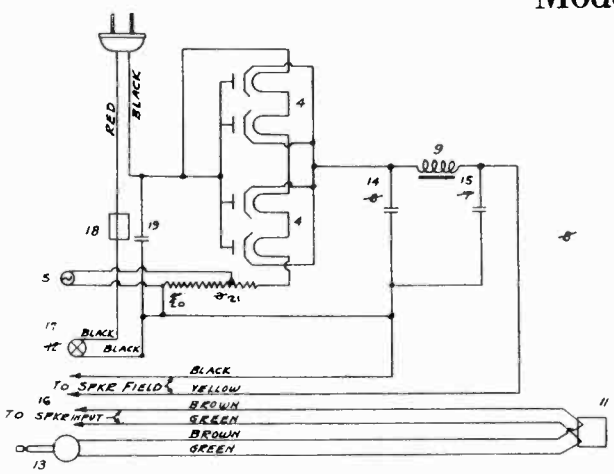

Model 38

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64			80		
65			81		
66			82		
67			83		
68			84		
69			85		
70			86		
71			87		
72			88		
73			89		
74			90		
75			91		
76			92		
77			93		
78			94		

RECORD OF CHANGES

		Change No.
A	ITEMS 6-7-8 REPLACED BY ITEMS 14-15 6-15-33 EFF.	5327
B	CABLE ADDED ITEM 16 6-19-33 EFF.	5331
C	ITEM 12 REPLACED BY ITEM 17 6-30-33 EFF.	3430
D	ITEM 10 REPLACED BY ITEM 18 6-22-33 EFF.	5325
E	CIRCUIT CHANGED ITEM 19 ADDED 6-30-33 EFF.	3457
F	ITEMS 2-3 REPLACED BY ITEMS 20-21 6-7-33 CHGS.	3488

THE CROSLEY RADIO CORPORATION, CINCINNATI, OHIO

MODEL 38 AC-DC SPEAKER FIELD SUPPLY

DRAWN	DATE	APPROVED	DWG. NO.
RVR 6-10-33	5-26-33		B-29957

MODEL 98
Schematic
Voltage

CROSLEY RADIO CORP.

Model 98

Specifications

Model 98 is a five tube superheterodyne designed for automobile operation. The intermediate frequency is 181.5 KC. The "A" supply is furnished by the automobile storage battery and the "B" supply by the automobile storage battery used in connection with a Crosley Syncronode. Service information on the Syncronode is furnished in a separate bulletin.

Tubes and Voltage Limits

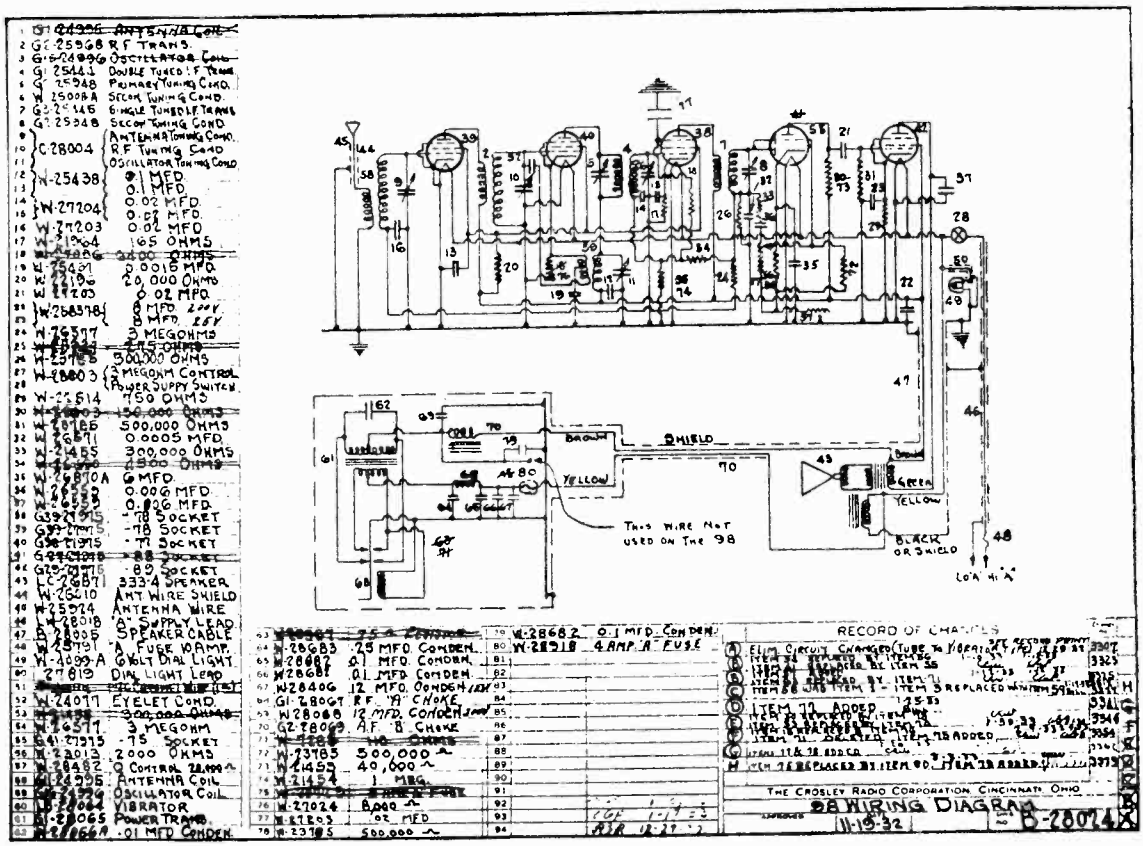
The following chart gives the tubes, their functions, and voltages, measured with the receiver in operating condition but with no signal to the antenna circuit. Use a high resistance D. C. voltmeter (1000 ohms per volt or more) for all measurements. The voltage limits are + or — 10% of the values given.

All voltages are measured from tube contact to chassis with 6.3 volts at the battery and 180 volts from the Syncronode.

The "Q" control should be entirely off.

Tube	Position	Voltages Plate	Screen Grid	Cathode	Supp. Grid	Fil.
-78	R. F. Amplifier	180	85	0	0	6.0
-77	Oscillating detector	180	85	4.5	4.5	6.0
-78	I. F. Amplifier	180	85	2.0	0	6.0
-75	Diode—A. F. Amplifier	130		1.5		6.0
-89	Output (Class A Pentode)	180	180	17.0	17.0	6.0

"A" battery drain—4.6 amp. at 6.3 volts.



CROSLEY RADIO CORP.

MODEL 99
Schematic
Voltage

Model 99

Specifications

Model 99 is a six tube superheterodyne designed for automobile operation. The intermediate frequency is 181.5 KC. The "A" supply is furnished by the automobile storage battery and the "B" supply by the automobile storage battery used in connection with a Crosley Syncronode. Service information on the Syncronode is furnished in a separate bulletin.

Tubes and Voltage Limits

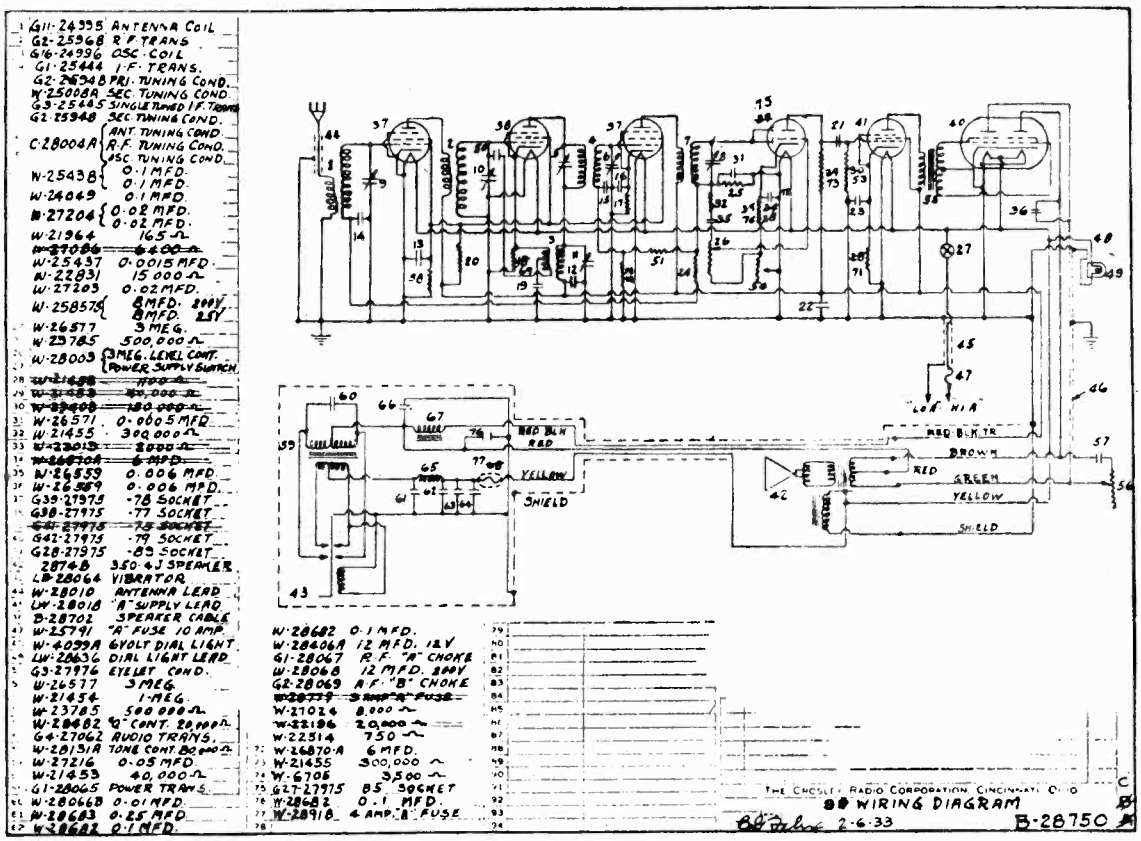
The following chart gives the tubes, their functions, and voltages measured with the receiver in operating condition but with no signal to the antenna circuit. Use a high resistance D. C. voltmeter (1000 ohms per volt or more) for all measurements. The voltage limits are + or — 10% of the values given.

All voltages are measured from tube contact to chassis with 6.3 volts at the battery and 170 volts from the Syncronode.

The "Q" control should be entirely off.

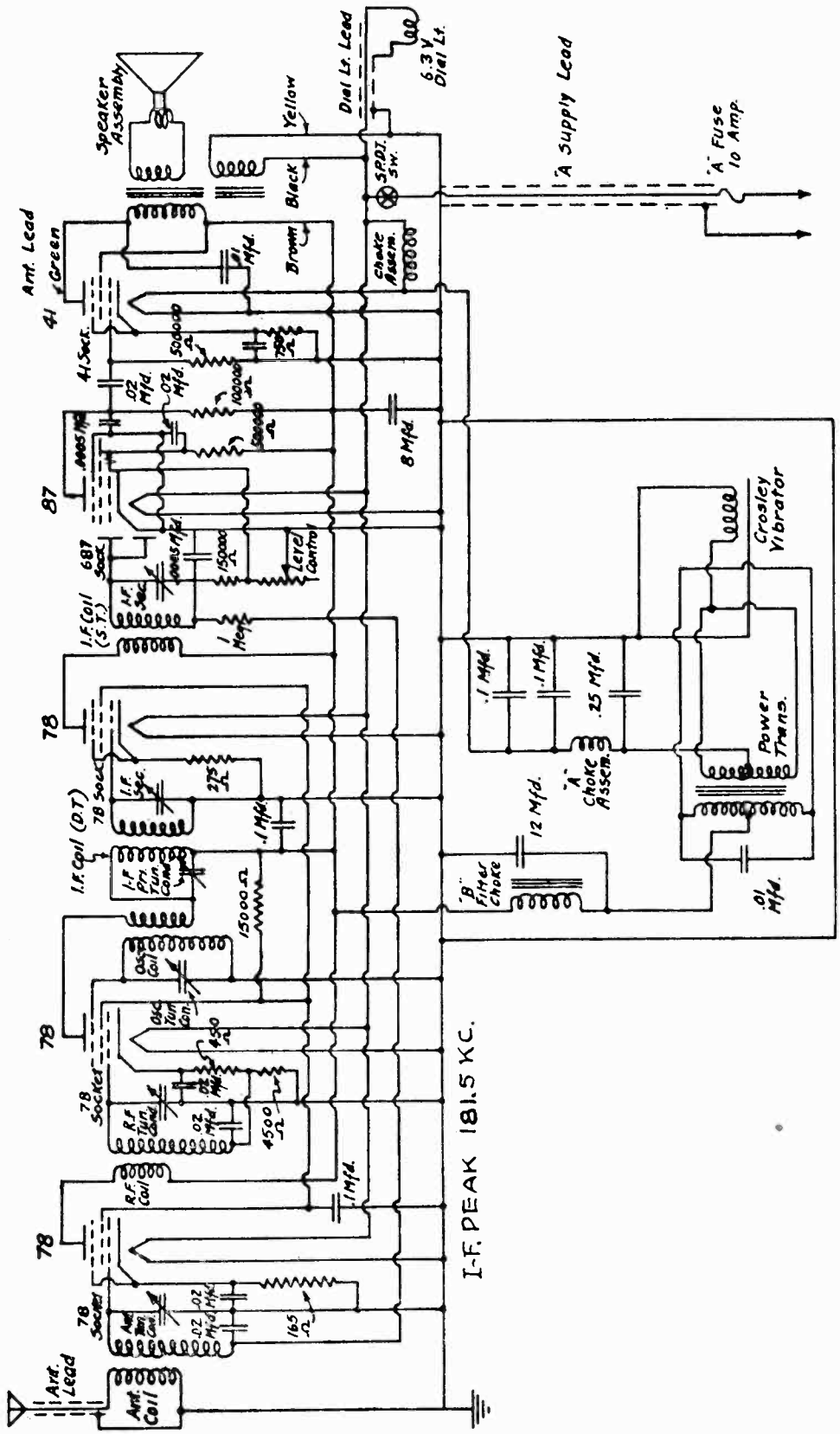
Tube	Position	Voltages Plate	Screen Grid	Cathode	Supp. Grid	Fil.
-78	R. F. Amplifier	170	80	0	0	6.0
-77	Oscillating detector	170	80	4.0	4.0	6.0
-78	I. F. Amplifier	170	80	1.5	1.5	6.0
-85	Diode—A. F. Amplifier	25		2.0		6.0
-89	A. F. Amplifier	170	170	17	17	6.0
-79	Output (Class B)	170		0		6.0

"A" battery drain—5.3 amp. at 6.3 volts.



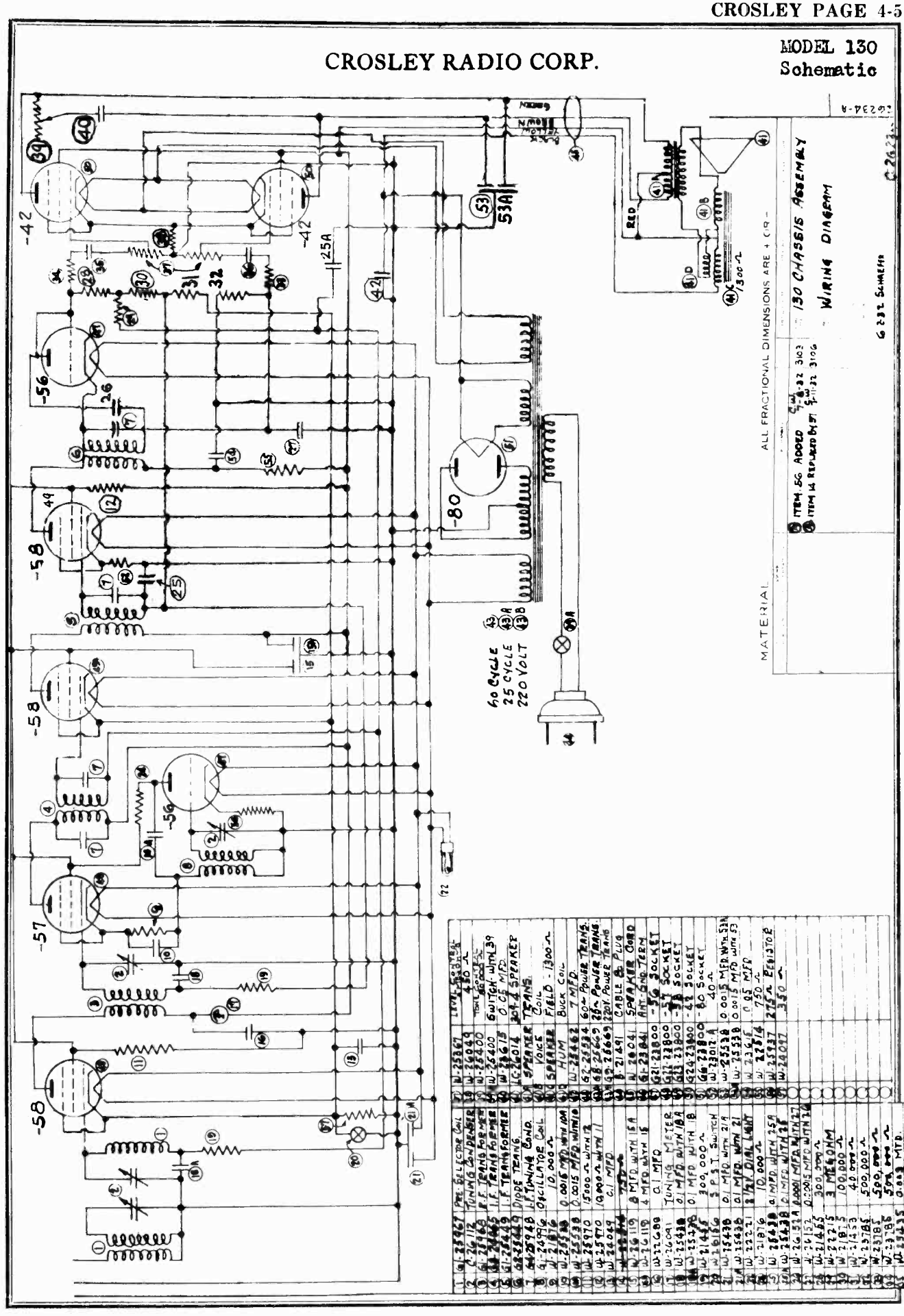
MODEL 102
Schematic

CROSLEY RADIO CORP.



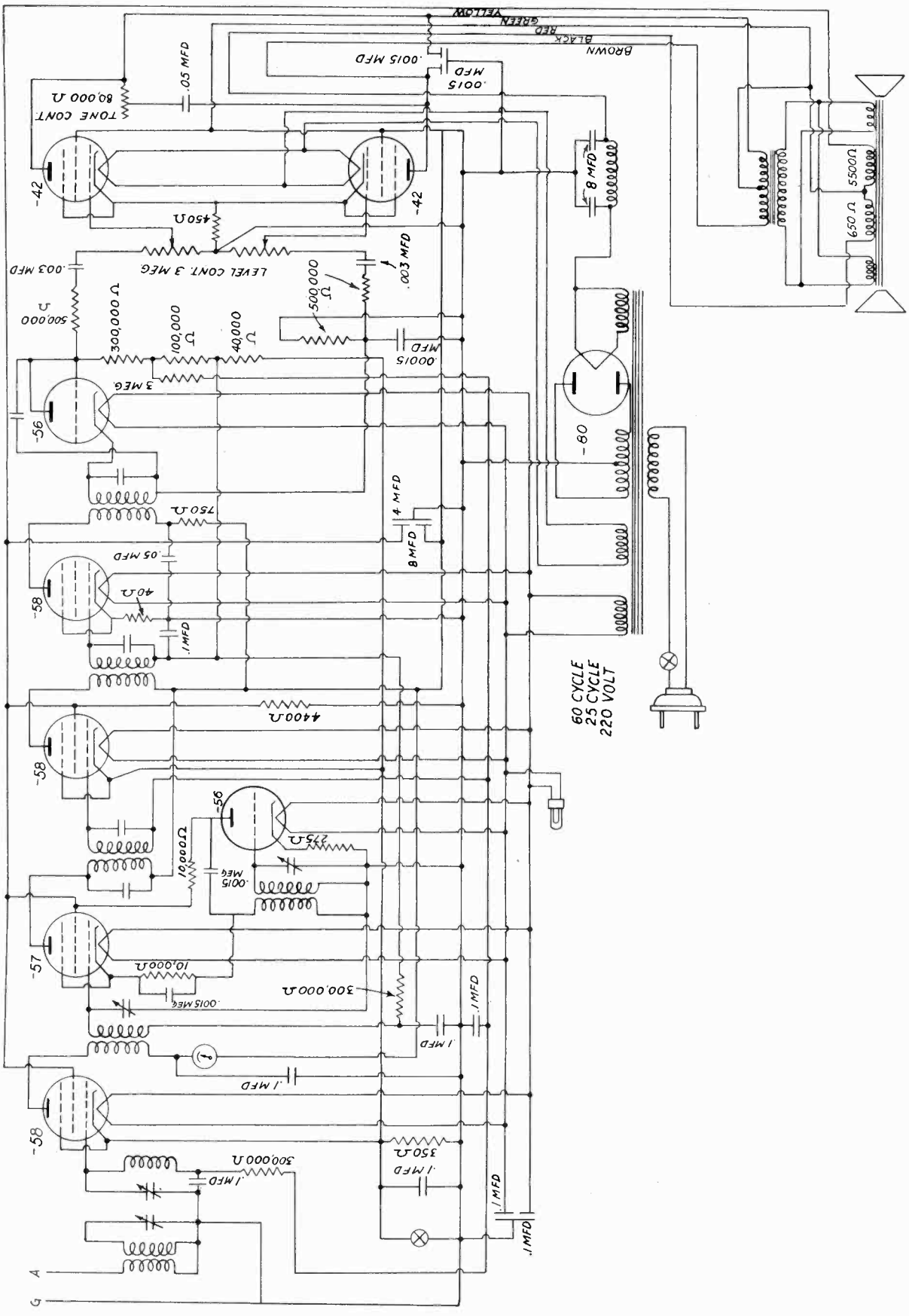
CROSLEY RADIO CORP.

MODEL 130
Schematic



MODEL 130-1
Schematic

CROSLEY RADIO CORP.



CROSLEY RADIO CORP.

MODEL 143
Schematic
Voltage

Model 143

Specifications

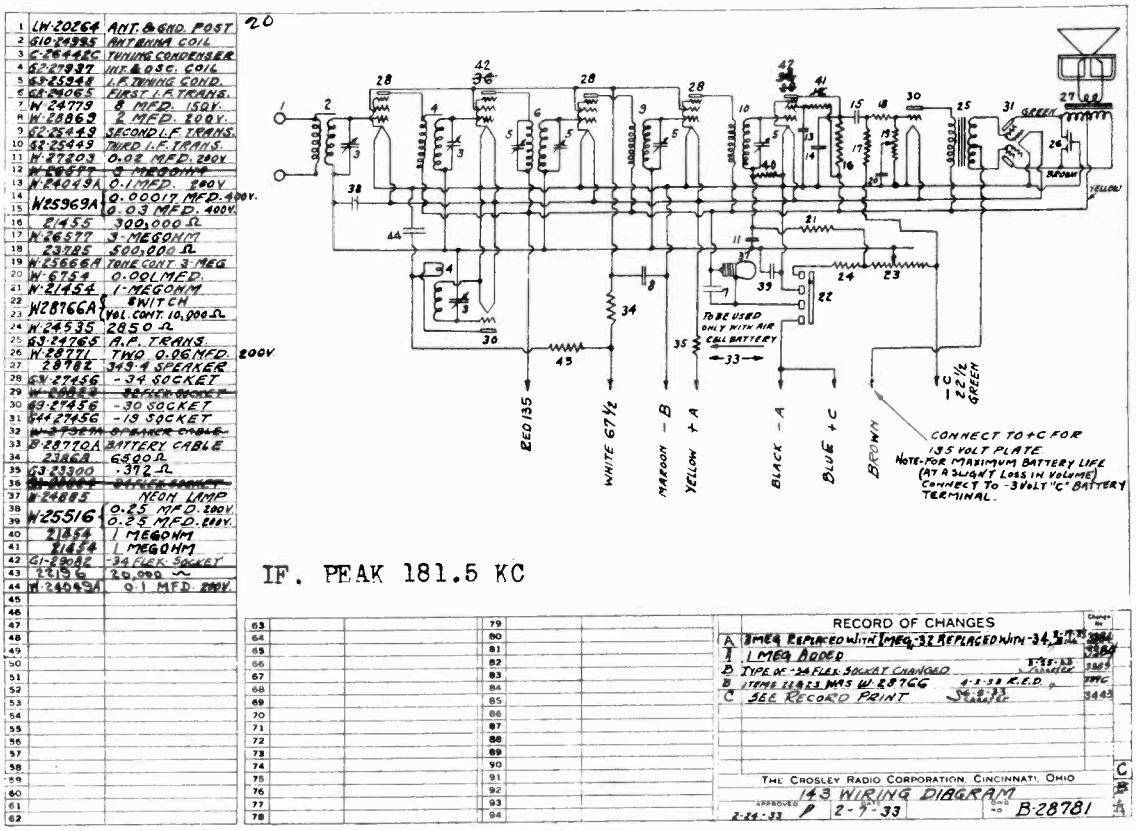
Model 143 is an eight tube superheterodyne designed for operation from a 2 volt "A" battery; 135 volts of "B" battery and 22½ volts of "C" battery. The intermediate frequency is 181.5 Kc.

Tubes and Voltage Limits

The tubes and voltages are given in the following table. All voltages, except bias, are measured with a 250 volt D.C. voltmeter (1000 ohms per volt, from "B-" to tube contact; with the receiver in operating condition, but no signal to the antenna circuit. Bias voltages are measured from negative filament to grid.

Tube	Position	Plate	Screen Grid	Bias	Filament
34	R. F. Amplifier	135	50	4	2.0
30	Oscillator	15		0	2.0
34	Modulator	135	50	4	2.0
34	I. F. Amplifier	135	50	4	2.0
34	I. F. Amplifier	135	50	4	2.0
34	Detector	80	20	0.5	2.0
30	A. F. Amplifier	135		1.5	2.0
19	Output	135		0	2.0

Voltage limits are plus or minus 10% of values given.
Voltages between "B-" and chassis is 4 volts, used for R. F., I. F., and modulator bias.



MODEL 159
Schematic
Voltage

CROSLEY RADIO CORP.

Model 159

Specifications

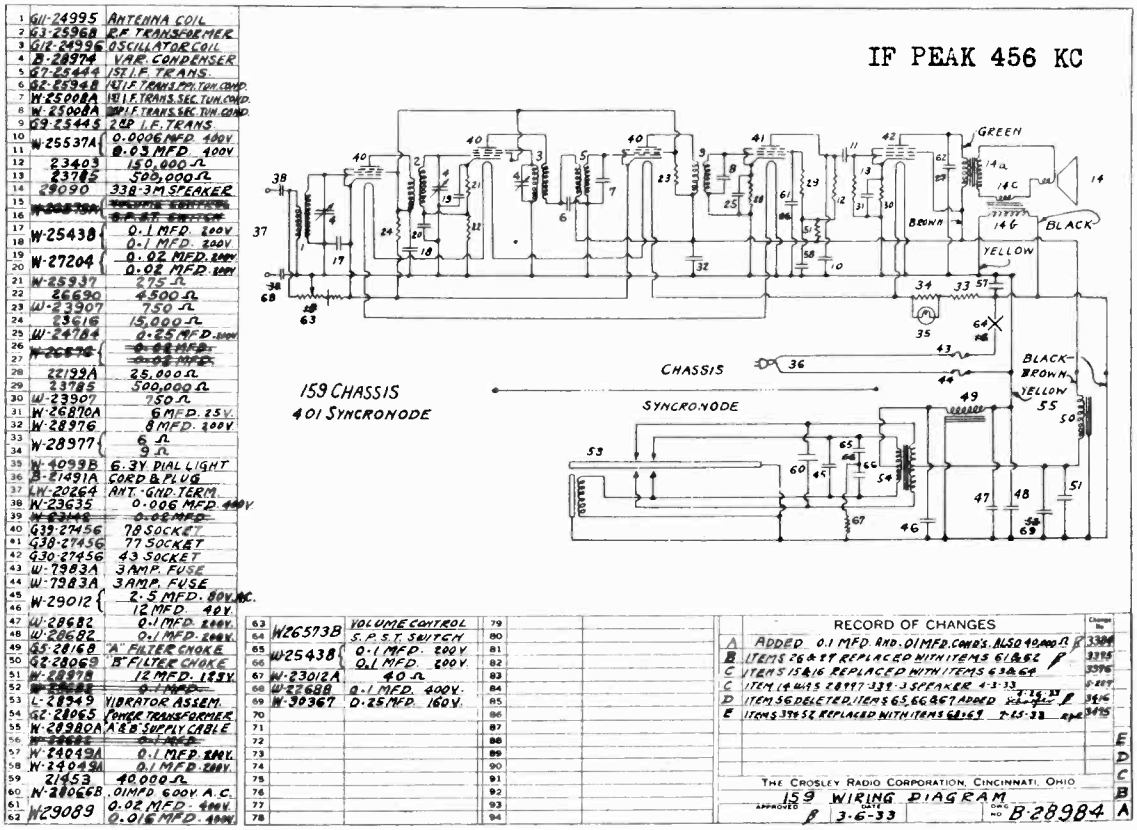
Model 159 is a five tube superheterodyne designed for operation from a 32 volt D.C. lighting system. It receives its "B" supply from a Crosley Syncronode. The intermediate frequency is 456 Kc.

Tubes and Voltage Limits

The tubes and voltages are given in the following table. All voltages are measured with a 300 volt D.C. voltmeter (1000 ohms per volt) with a line voltage of 32 volts, from tube contact to chassis. The receiver should be in operating condition, but with no signal to the antenna circuit.

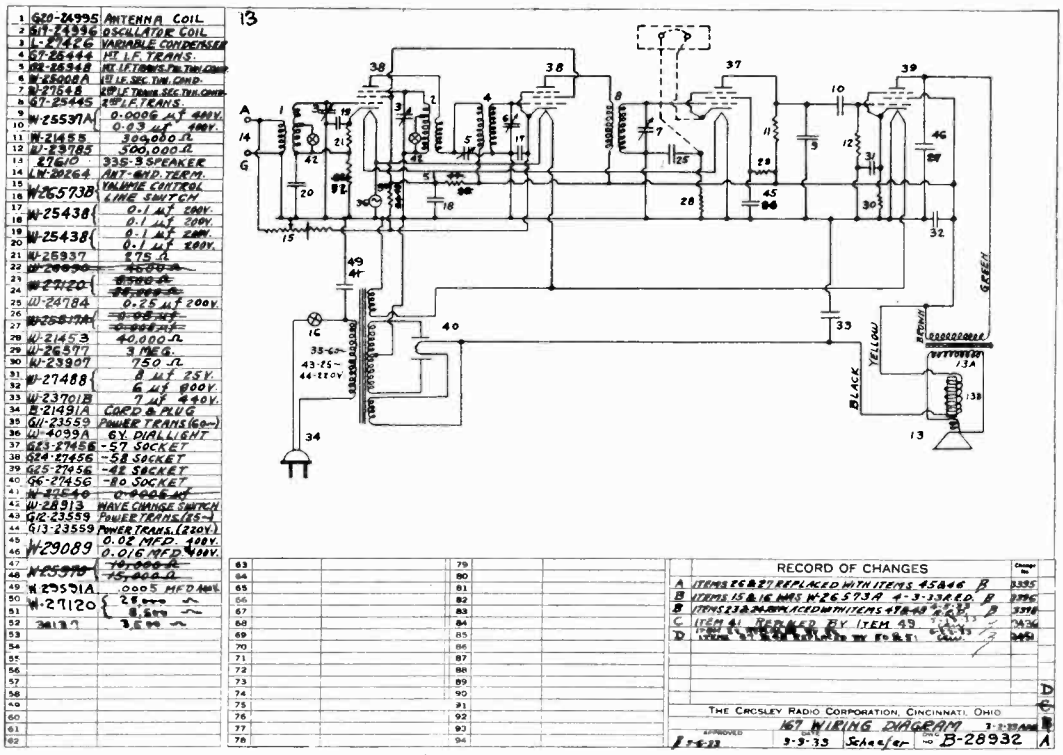
Tube	Position	Plate	Screen Grid	Cathode	Suppressor Grid	Filament
78	R. F. Amplifier	130	130	4.5	4.5	6.0
78	Oscillator Modulator	147	130	33.0	0	6.0
78	I. F. Amplifier	147	130	4.5	4.5	6.0
77	Detector	53	26.5	6.0	6.0	6.0
43	Output	146	147	6.0		24.0

Voltage limits are plus or minus 10% of values given.



CROSLEY RADIO CORP.

MODEL 167
Schematic
Parts List



PARTS LIST—MODEL 167

INSTRUCTIONS FOR ORDERING—Give part number, description of part, and serial number of receiver on which part is to be used. If article wanted is not listed separately, then that part of complete assembly containing this article should be ordered. Goods shipped on open account to Crosley Wholesale Distributors only. Cash must accompany Dealer and Consumer orders. Prices are subject to the usual trade discounts, and are subject to change without notice.

* Figures in 2nd last column refer to parts shown in diagram.

Qty.	Part No.	Description	*	List Price Each
1	G20-24995	Antenna coil	1	.65
1	G17-14996	Oscillator coil	2	.80
2	W-25025	Coil shield		.10
1	G7-25444	First I. F. transformer	4	.60
1	G7-25445	Second I. F. transformer	8	.60
2	W-25024	I. F. Transformer shield		.10
4	W-25200	Coil Socket		.05
4	W-21451	Retaining ring		.05
2	W-24360	Insulating washer		.05
1	W-30414	Wave-change switch		.40
1	W-27425	Variable condenser assem.	3	2.75
1	G1-27812	Dial light socket		.20
1	G5-25050	Dial Assembly		.40
1	G2-25948	I. F. condenser blade (1st I. F. primary)	5	.30
1	W-25008	I. F. condenser blade (1st I. F. secondary)	6	.05
1	W-27548	I. F. condenser blade (2nd I. F. secondary)	7	.05
2	W-25446	Bakelite washer (large)		.05
2	W-25584	Mica insulator		.05
2	R-80	4-36x⅜ R. H. M. screw		.05
2	W-26069A	Adjusting nut		.05
2	W-24865	Metal washer		.05
2	W-25450	Insulating washer		.05
2	W-25007	Insulating washer		.05
2	O-4	No. 4 Flat washer		.05
2	M-20	Rivet		.05
1	W-20264	A. G. Terminal strip	14	.15
1	G23-27456	Socket -57	37	.10
2	G24-27456	Socket -58	38	.10
1	G43-27456	Socket -2A5 or	57	.10
1	G25-27456	Socket -42	39	.10
1	G6-27456	Socket -80	40	.10
3	W-26010	Tube shield base		.05
3	B-26009	Tube shield		.10
1	B-21491	AC cable	34	.25
1	W-31009	Speaker cable	62	.25
1	W-26573	Vol. Control & switch	15-16	1.00

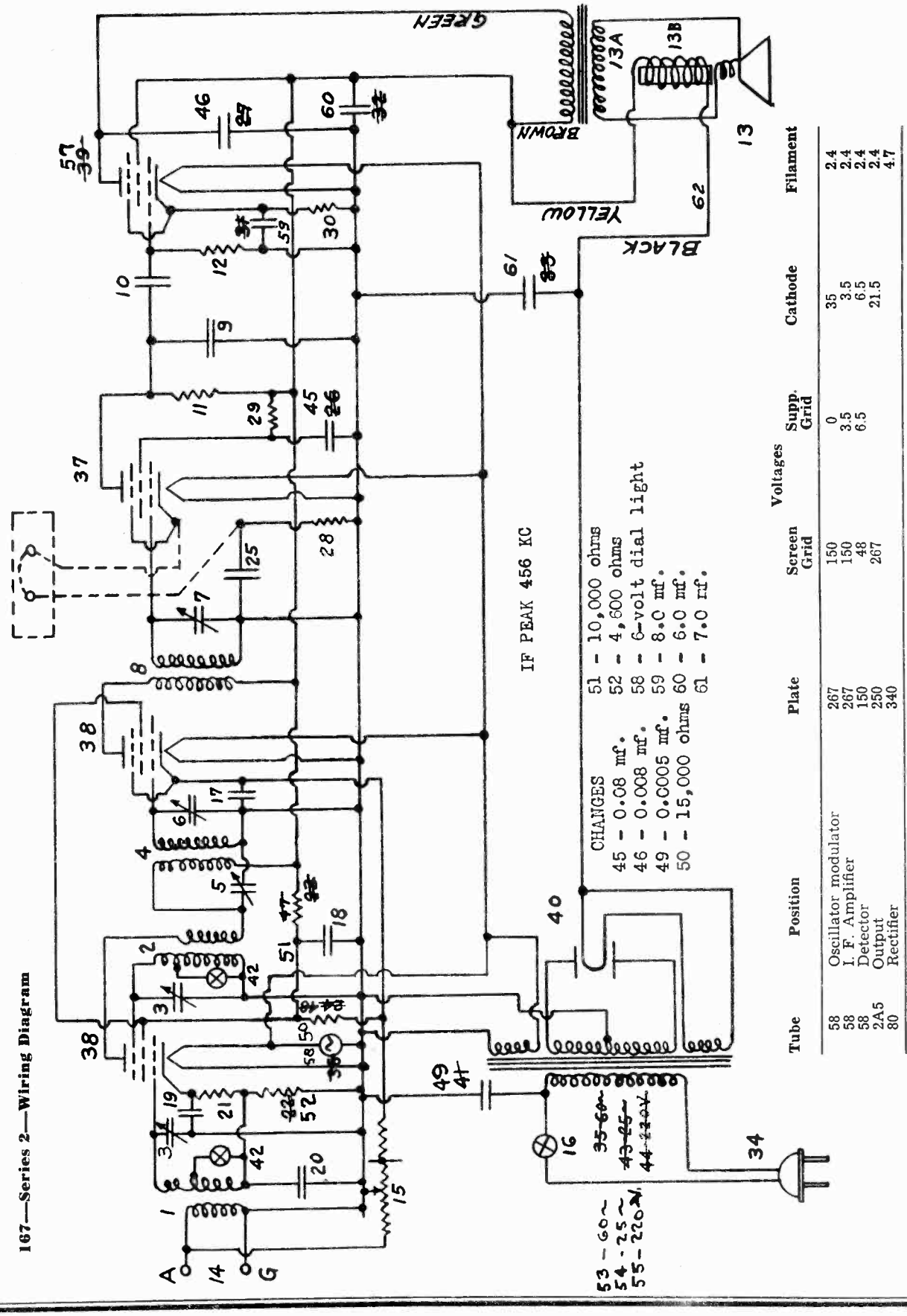
Qty.	Part No.	Description	*	List Price Each
3	G1-23472	Knobs		.10
1	W-27478	Escutcheon		.15
3	S-27	Escutcheon screws		.05
1	B-28478	Back		.25
1	W-23880	Thumb screw for back		.05
		POWER TRANSFORMING		
1	G11-23559	Power Trans. (100 volt, 60 cy.) (-42 output)	35	2.25
1	G12-23559	Power trans. (110 volt, 25 cy.) (-42 output)	43	3.00
1	G13-23559	Power trans. (220 volt, 25 cy.) (-42 output)	44	3.00
1	G20-23559	Power trans (110 volt, 60 cy.) (-2A5 output)	53	2.75
1	G21-23559	Power trans. (110 volt, 25 cy.) (-2A5 output)	54	4.25
1	G22-23559	Power trans. (220 volt, 25 cy.) (-2A5 output)	55	4.25
		FILTER & BYPASS CONDENSERS		
1	W-25537	Condenser .03 -.0006 Mfd.	9-10	.30
2	W-25438	Condenser .1 - 1 Mfd.	17-18	
			19-20	
1	W-24784	Condenser .25 Mfd.	25	.20
1	W-29089	Condenser .02 -.016 Mfd.	45-46	.25
1	W-29591	Condenser .0005 Mfd.	49	.20
1	W-29150A	Condenser 6.-7.-8. Mfd. or	59-60	
			61	2.90
1	W-27488	Condenser 6.-8. Mfd.	31-32	1.10
1	W-23701	Condenser 7. Mfd.	33	.80
		RESISTORS		
1	W-21455	Resistor 300,000 ohm	11	.15
1	W-23785	Resistor 500,000 ohm	12	.15
1	W-21453	Resistor 40,000 ohm	28	.15
1	W-23907	Resistor 750 ohm	30	.20
1	W-25937	Resistor 275 ohm	21	.15
1	W-30137	Resistor 3,500 ohm	52	.20
1	W-27120	Resistor 25,000-8500 ohm	50-51	.40
1	W-26577	Resistor 3 Megohm	29	.15

SPEAKER PARTS

	Magnavox 335—3M Spec. 715	Magnavox 335—3M Spec. 1602	Jensen 335—3J Spec. 3452	Rola 335—3R Spec. F-5-A	Crosley 335—3C			
1	27452	30675	30658	30955	G2-29529	Cone Assem.	13	2.50
1	27658	30676	30659	30580	W-29764	Field Coil	13B	1.10
1	27660	30677	30660	30956	G2-29535	Transformer	13A	1.25

MODEL 167 Series 2
Schematic, Voltage

CROSLEY RADIO CORP.



Tube	Position	Plate	Screen Grid	Voltages Supp. Grid	Cathode	Filament
58	Oscillator modulator	267	150	0	35	2.4
58	I. F. Amplifier	267	150	3.5	3.5	2.4
58	Detector	150	48	6.5	6.5	2.4
2A5	Output	250	267		21.5	2.4
80	Rectifier	340				4.7

Voltage limits are plus or minus ten percent of the values given.

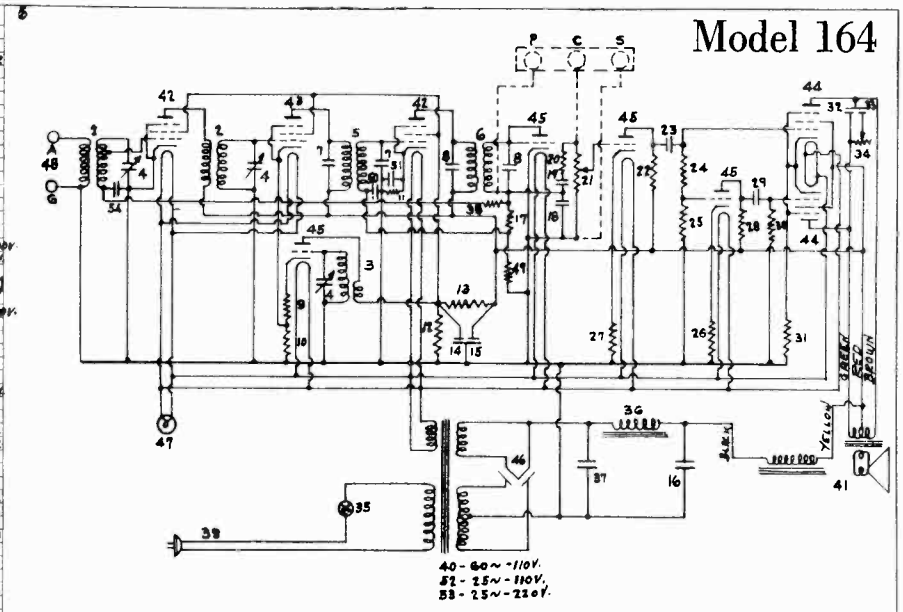
167—Series 2—Wiring Diagram

CROSLEY RADIO CORP.

MODEL 164
Schematic
MODEL 176
Schematic

Model 164

1	G1-24995	ANTENNA COIL
2	G2-24996	INTERSTAGE COIL
3	G4-24997	OSCILLATOR COIL
4	C-24442C	TUNING CONDENSER
5	G5-24965	1ST I.F. TRANS.
6	G6-24965	2ND I.F. TRANS.
7	G8-25944	I.F. TUNING COND.
8	G9-25945	I.F. TUNING COND.
9	R-25013	2000 Ω
10	R-24997	350 Ω
11	R-21964	165 Ω
12	W-28471	25,000 Ω
13		8500 Ω
14		8 MFD. 25 V.
15	W-28097A	8 MFD. 250 V.
16		8 MFD. 450 V.
17	21454	1 MEG.
18	W-25969A	0.00017 MFD. 400 V.
19		0.03 MFD. 400 V.
20	21453	300,000 Ω
21	W-25966B	LEVEL CONT. (2 MEG.)
22	21287A	60,000 Ω
23	W-23615	0.05 MFD. 400 V.
24	21455	500,000 Ω
25	21453	40,000 Ω
26	W-23015	2000 Ω
27	R-23015	2000 Ω
28	21287A	60,000 Ω
29	W-23618	0.05 MFD. 400 V.
30	21455	500,000 Ω
31	W-22873	220 Ω
32	W-25517A	0.008 MFD. 400 V.
33		0.05 MFD. 400 V.
34	W-25934B	TONE CONT. (1/2 MEG.)
35		S.P.S.T. SWITCH
36	G1-24628	FILTER CHOKE
37	W-23705-A	12 MFD. 440 V.
38	26377	8 MFD.
39	B-21491A	CABLE & PLUG
40	S15-25669	POWER TRANS. (110 V.)
41	27622	317-4M SPKR.
42	S24-27456	6A SOCKET
43	S23-27456	6T SOCKET
44	S43-27456	25Z5 SOCKET
45	S18-27456	6C SOCKET
46	S6-27456	6Q SOCKET
47	W-2221	2.5 V. DIAL LIGHT
48	LW-20264	ANT.-GND. TERM.
49	28409	150,000 Ω
50	W-25488	0.1 MFD. 200 V.
51		0.1 MFD. 200 V.
52	S16-25663	AUDIO TRANS. (OPT.)
53	S17-24663	POWER TRANS. (120 V.)
54	W-27208	0.02 MFD. 200 V.



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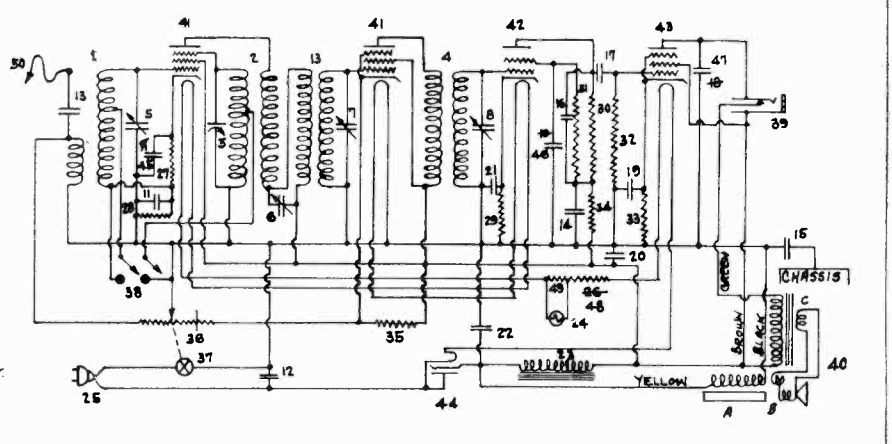
RECORD OF CHANGES

		Change No.
A	ITEM 4 WAS C-29028 4-11-33 P.L.D.	5736

THE CROSLEY RADIO CORPORATION, CINCINNATI, OHIO
164 WIRING DIAGRAM
APPROVED 4-6-33 DATE 4-8-33 DRG. NO. B-29130 A

Model 176

1	G15-24995	ANTENNA COIL
2	G20-24996	OSCILLATOR COIL
3	G7-24444	1ST I.F. TRANS.
4	G8-24445	2ND I.F. TRANS.
5	B-24892 E	TUNING CONDENSER
6	G8-25948	1ST I.F. PRI. TRIMMER
7		1ST I.F. SEC. TRIMMER
8	G9-25948	2ND I.F. SEC. TRIMMER
9	W-27209	0.02 MFD. 200 V.
10		0.02 MFD. 200 V.
11	W-28271	0.02 MFD. 400 V.
12		0.02 MFD. 400 V.
13	W-28620	0.003 MFD. 200 V.
14	W-28622	0.1 MFD. 200 V.
15		0.1 MFD. 200 V.
16	W-29445	0.000 1 MFD. 200
17		0.806 MFD. 200 V.
18	W-26583	0.004 MFD.
19	W-25878	8 MFD. 25 V.
20		8 MFD. 200 V.
21	W-26870 A	6 MFD. 25 V.
22	W-28068	12 MFD. 200 V.
23	G1-28859	POWER SUPPLY FILTER CHOKE
24	W-4099 A	6.3 V. DIAL LIGHT
25	W-27885 A	CORD & PLUG
26	W-29447	245 Ω
27	W-28589	350 Ω
28	28588	2700 Ω
29	21287A	60,000 Ω
30	21454	1 MEG.
31	26377	.8 MEG.
32	26578	.5 MEG.
33	W-22614	780 Ω
34	21458	300,000 Ω
35	492HG	10,000 Ω
36	W-28584 A	VOLUME CONTROL
37		S.P.S.T. SWITCH
38	W-28958 A	WAVE CHANGE SWITCH S.P.S.T.
39	W-29547	EXTENSION SPKR. JACK
40	28867	345-2M SPEAKER
41	G29-28807	7B SOCKET
42	G11-28807	6G SOCKET
43	G15-28807	6B SOCKET
44	G60-28867	12Z3 SOCKET
45	W-28623	.02 MFD. 200 V.
46		.02 MFD. 200 V.
47	W-28619	.006 MFD. 200 V.
48	W-29447-A	224 Ω
49		726 Ω
50	W-29784 A	ANTENNA POST, SHORT



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RECORD OF CHANGES

		Change No.
A	[illegible] REPLACED BY 25 & 45	5429
B	SPKR. COLOR CODE ADDED 5-7-33	5508
C	ITEM 26 REPLACED BY ITEMS 48 & 49	5453

THE CROSLEY RADIO CORPORATION, CINCINNATI, OHIO
176 WIRING DIAGRAM
APPROVED 5/15/33 DATE 5-11-33 DRG. NO. B-29514 C

MODEL 166
Schematic, Voltage
MODEL 172
Schematic, Voltage

CROSLEY RADIO CORP.

Specifications

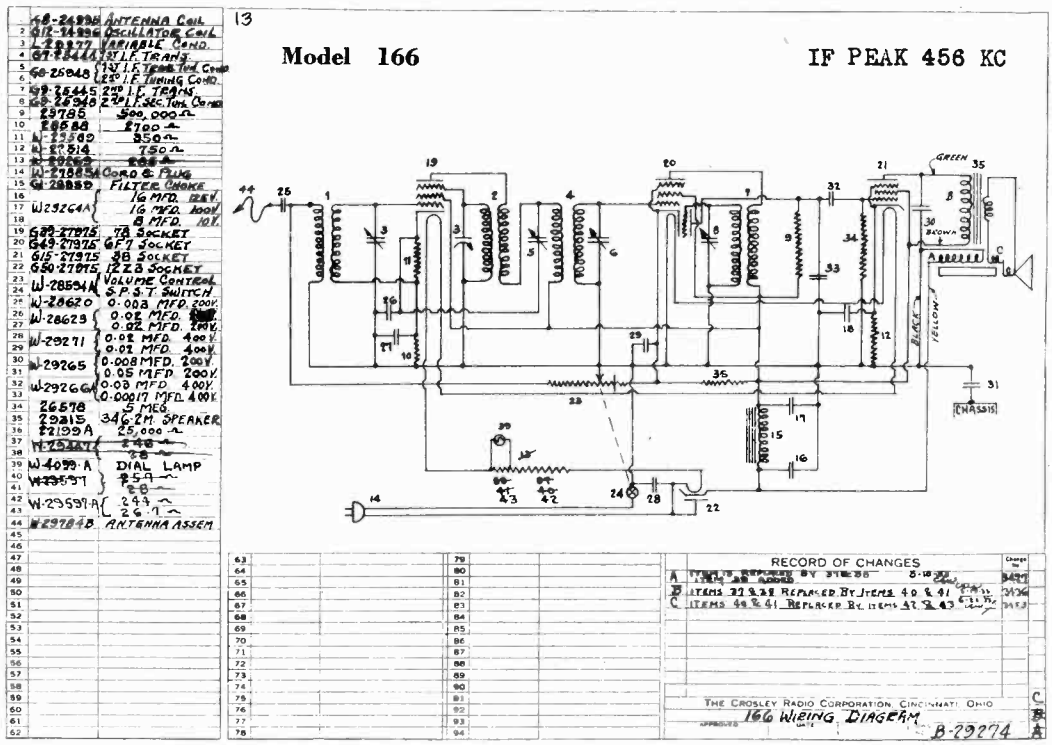
Models 166 and 172 are four tube superheterodyne receivers designed for operation on 110 volt D.C. or 25 to 60 cycle A.C. The intermediate frequency is 456 Kc. The only difference between these sets is that Model 172 is a dual band receiver and Model 166 is a broadcast band receiver only.

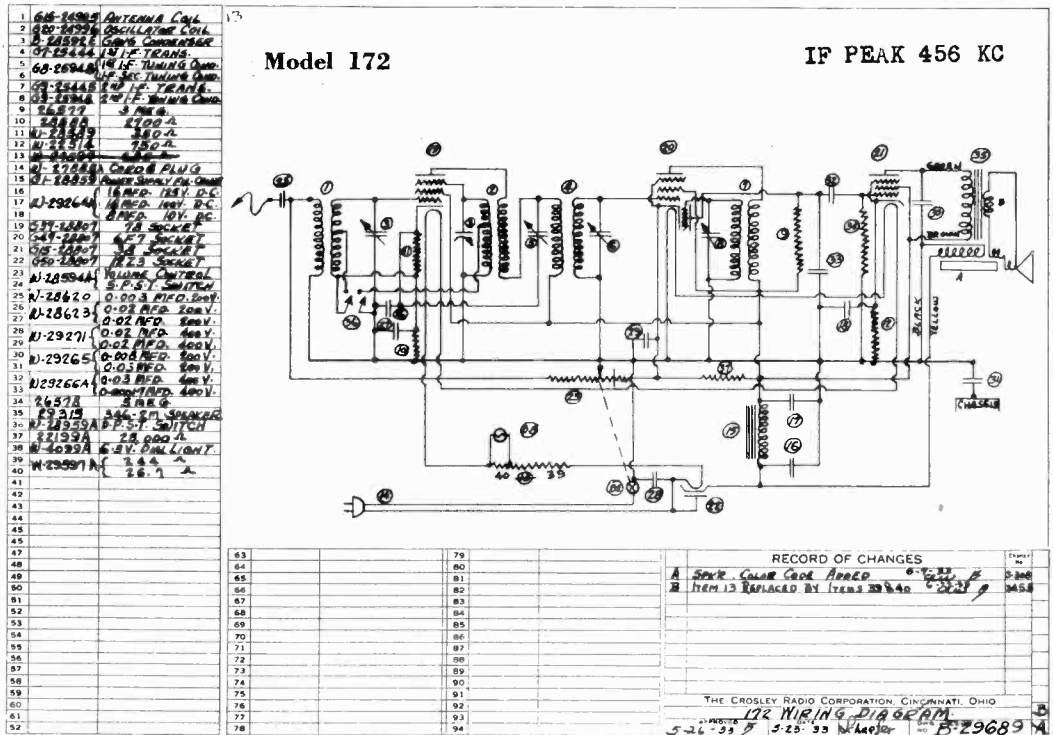
Tubes and Voltage Limits

The following are the voltages measured with the receiver in operating condition but with no signal to the antenna circuit. Line voltage is 117.5 volts, 60 cycle A.C. All voltages, except filament, are measured with 300 volt D.C. voltmeter (1000 ohms per volt) from tube contact to gang condenser frame. Filament voltages are measured with a low range A.C. voltmeter.

Tube	Position	Plate	Screen Grid	Cathode	Suppressor Grid	Filament
78	Oscillator Modulator	101	101	20	0	6.0
6F7	I. F. Amplifier and Detector	101	101	4.5		6.0
38	Output	Triode 7.5	101	2.0		6.0
12Z3	Rectifier	98		117.5		12.0

Voltages on D. C. are approximately 10% lower than the values given.
Voltage limits are plus or minus 10% of values given.





CROSLEY RADIO CORP.

MODEL 168
Schematic
Voltage

Model 168

Specifications

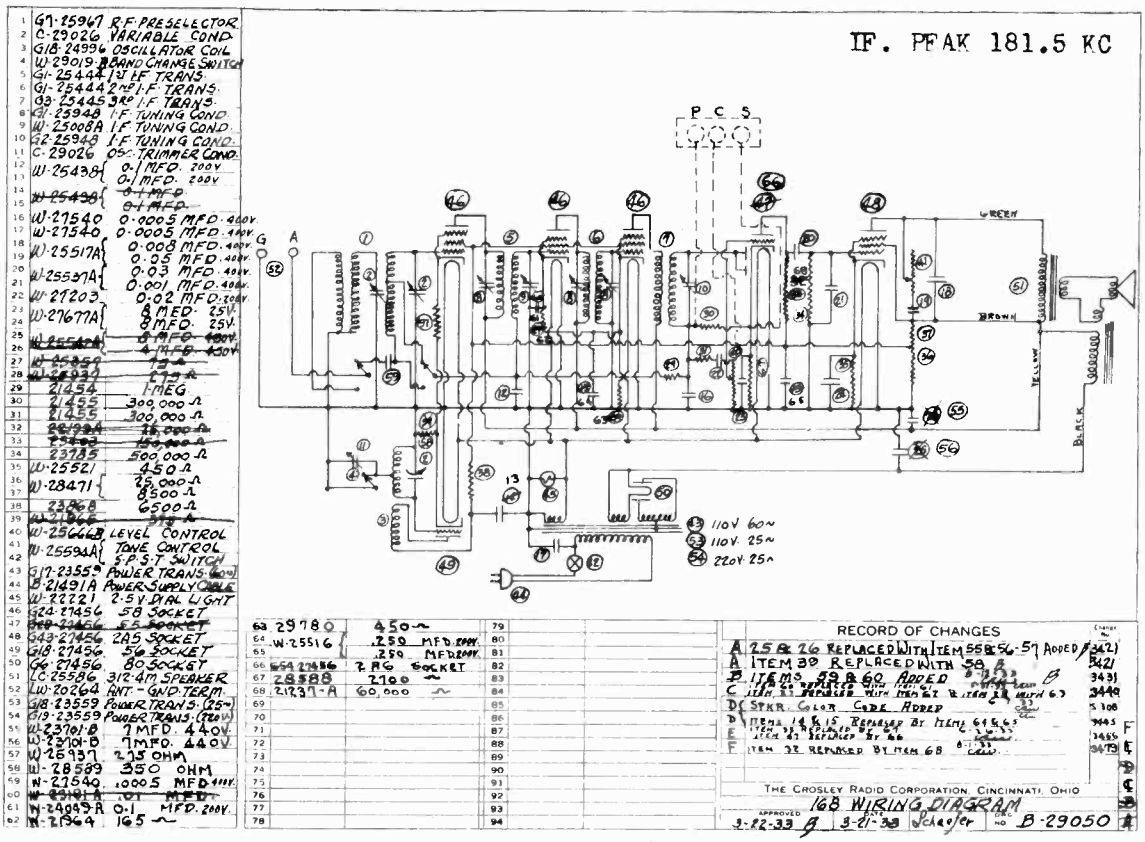
Model 168 is a seven tube dual band superheterodyne designed for operation from A.C. electric circuits. The intermediate frequency is 181.5 Kc.

Tubes and Voltage Limits

The following are the tubes and voltages measured with the receiver in operating condition but with no signal to the antenna circuit. Line voltage should be 117.5 volts (235 volts for 220 volt receivers). All voltages, except filament, are measured from tube contact to chassis with a 500 volt D.C. voltmeter (1000 ohms per volt). Filament voltages are measured with a low range A.C. voltmeter.

Tube	Position	Plate	Screen Grid	Cathode	Suppressor Grid	Filament
56	Oscillator	66		6.5		2.5
58	Modulator	270	122	8.0	8.0	2.5
58	I. F. Amplifier	270	122	8.5	8.5	2.5
58	I. F. Amplifier	270	122	7.0	7.0	2.5
2A6	Detector and A. F. Amplifier	231		2.0		2.5
2A5	Output	257	270	18.0		2.5
80	Rectifier	380				4.9

Voltage limits are plus or minus 10% of values given.



MODEL 169
Schematic
Voltage

CROSLEY RADIO CORP.

Model 169

Specifications

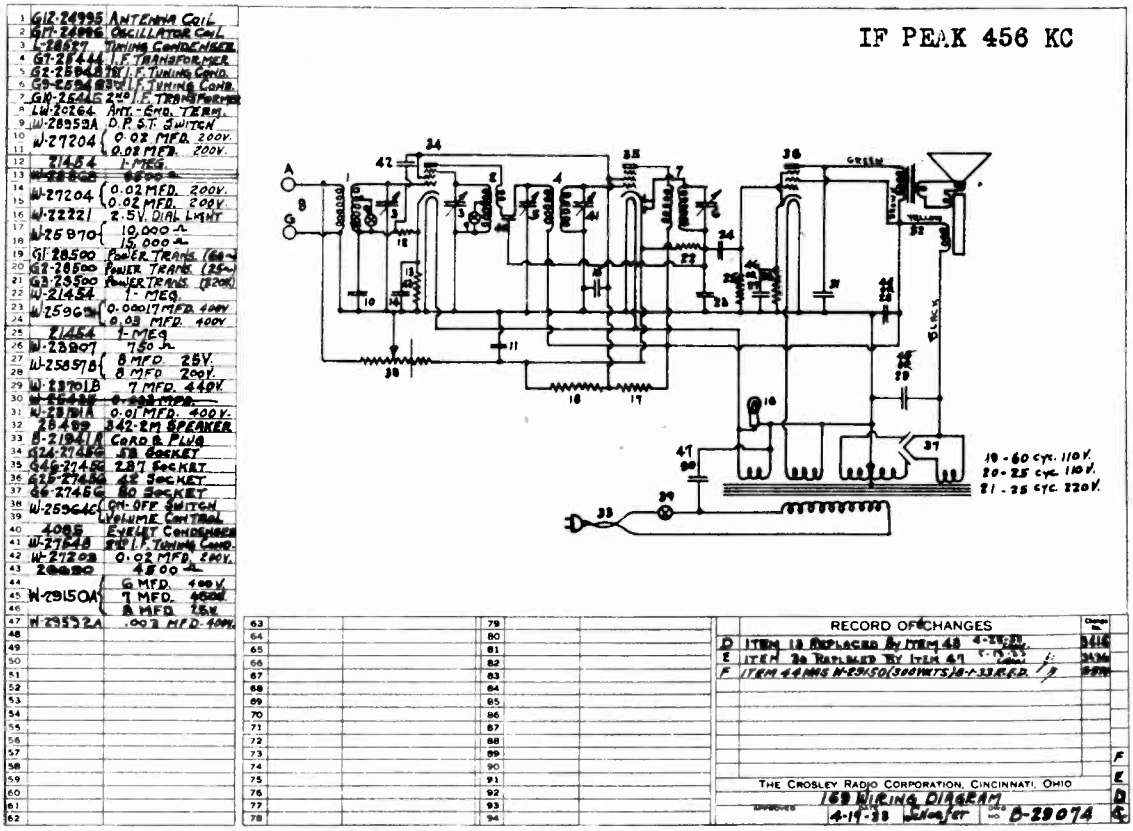
Model 169 is a four tube dual band superheterodyne designed for operation from A.C. electric circuits. The intermediate frequency is 456 Kc.

Tubes and Voltage Limits

The following are the tubes and voltages measured with the receiver in operating condition but with no signal to the antenna circuit, with a line voltage of 117.5 volts (235 volts for 220 volt receivers). All voltages, except filament, are measured with a 500 volt D.C. voltmeter (1000 ohms per volt) from tube contact to chassis. Filament voltages are measured with a low range A.C. voltmeter.

Tube	Position	Plate	Screen Grid	Cathode	Suppressor Grid	Filament
58	Oscillator-Modulator	188	88	28	0	2.5
2B7	I. F. Amplifier and Detector	188	88	2		2.5
42	Output	178	188	14.5		2.5
80	Rectifier	322				4.9

Voltage limits are plus or minus 10% of values given.



CROSLEY RADIO CORP.

MODEL 170
Schematic
Voltage

Model 170

Specifications

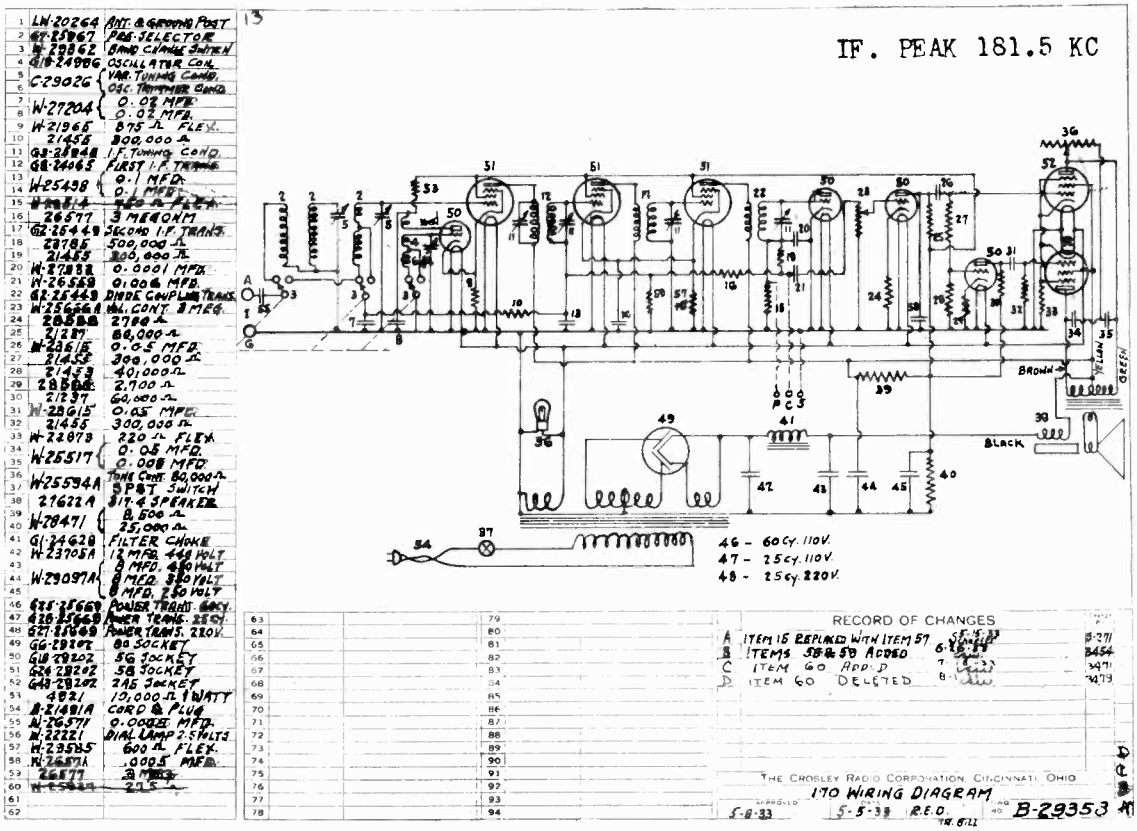
Model 170 is a ten tube dual band superheterodyne designed for operation from A.C. electric circuits. The intermediate frequency used is 181.5 Kc.

Tubes and Voltage Limits

The following are the tubes and voltages measured with the receiver in operating condition but with no signal to the antenna circuit, and with a line voltage of 117.5 volts (235 volts for 220 volt receivers). All voltages, except filament, are measured with a 500 volt D.C. voltmeter (1000 ohms per volt) from tube contact to chassis. Filament voltages are measured with a low range A.C. voltmeter.

Tube	Position	Plate	Screen Grid	Cathode	Suppressor Grid	Filament
58	Modulator	276	120	6.0	6.0	2.5
56	Oscillator	50		6.0		2.5
58	I. F. Amplifier	276	120	8.0	8.0	2.5
58	I. F. Amplifier	276	120	8.0	8.0	2.5
56	Detector	0				
56	Phase Shifter	55		0		2.5
56	A. F. Amplifier	56		2.0		2.5
2-2A5	Output	269		3.0		2.5
80	Rectifier	355	276	18.0		2.5
						4.9

Voltage limits are plus or minus 10% of values given.



MODEL 171
Schematic
Voltage

CROSLEY RADIO CORP.

Model 171

Specifications

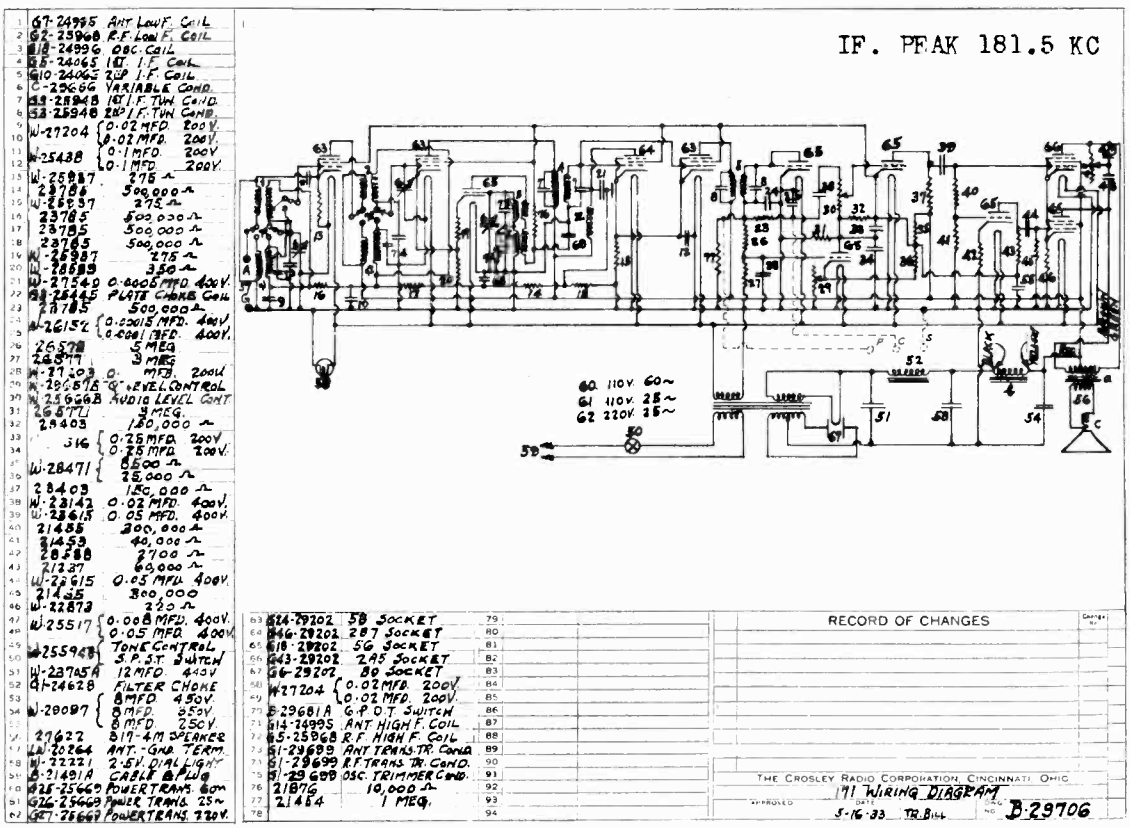
Model 171 is a twelve tube dual band superheterodyne designed for operation from A.C. electric circuits. The intermediate frequency is 181.5 Kc.

Voltages and Tube Limits

The following are the tubes and voltages measured with the receiver in operating condition but with no signal to the antenna circuit, and with a line voltage of 117.5 volts (235 volts for 220 volt receivers). All voltages, except filament are measured with a 500 volt D.C. voltmeter (1000 ohms per volt) from tube contact to chassis. Filament voltages are measured with a low range A.C. voltmeter.

Tube	Position	Plate	Screen Grid	Cathode	Suppressor Grid	Filament
58	R. F. Amplifier	267	115	3.0	3.0	2.5
56	Oscillator	60		7.0		2.5
58	Modulator	267	115	5.5	5.5	2.5
58	I. F. Amplifier	267	115	4.5	4.5	2.5
2B7	A. V. C. Tube	267	115	4.5	4.5	2.5
56	QAVC Tube	70		0-20.0*		2.5
56	Detector	0		0		2.5
56	Phase Shifter	58		2.5		2.5
56	A. F. Amplifier	170		115		2.5
2-2A5	Output	260	267	17.5		2.5
80	Rectifier	355				4.9

Voltage limits are plus or minus 10% of values given.
***Voltage depends on position of "Q" control.**



CROSLEY RADIO CORP.

MODEL 173,173-5
Schematic
Voltage

Models 173 and 173-5

Specifications

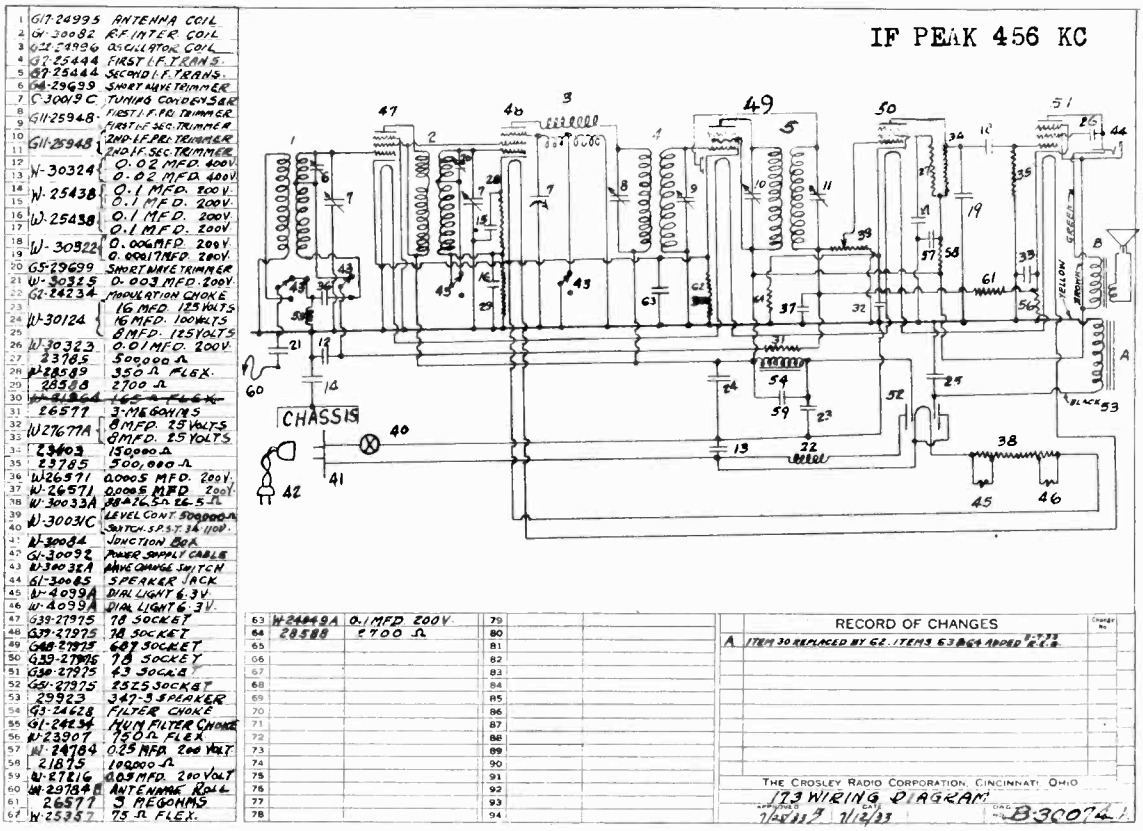
Models 173 and 173-5 are six tube dual band superheterodynes. Model 173 is designed for operation from 110 volts D.C. or 60 cycle A.C. Model 173-5 is designed for operation on 110 volts D.C. or 25 to 60 cycle A.C. The circuits of the two sets are similar except for the filter system. In Model 173-5, choke G6-28069 is substituted for choke G3-24628 used in the 173, and the condenser W-27216 is omitted. These models can be used with Model 38 power pack and remote speaker 390-6. The intermediate frequency is 456 Kc.

Tubes and Voltages

The following are the tubes and voltages measured with the receiver in operating condition, but with no signal to the antenna circuit, and with a line voltage of 117.5 volts 60 cycle A.C. All voltages, except filament, are measured with a 300 volt D.C. voltmeter (1000 ohms per volt) from tube contact to frame of condenser gang. Filament voltages are measured with a low range A.C. or D.C. meter (depending on supply).

Tube	Position	Plate	Screen Grid	Cathode	Suppressor Grid	Filament
78	R. F. Amplifier	112	112	4	0	6.3
78	Oscillator Modulator	112	112	20	0	6.3
6B7	I. F. Amplifier and Detector	112	112	4		6.3
78	A. F. Amplifier	7.5	12.5	4	4	6.3
43	Output	101	112	16.5		25
25Z5	Rectifier			125		25

Voltage limits are plus or minus 10% of values given.
D. C. voltages are 10% less than values given.



MODEL 174
Schematic
Voltage

CROSLEY RADIO CORP.

Model 174

Specifications

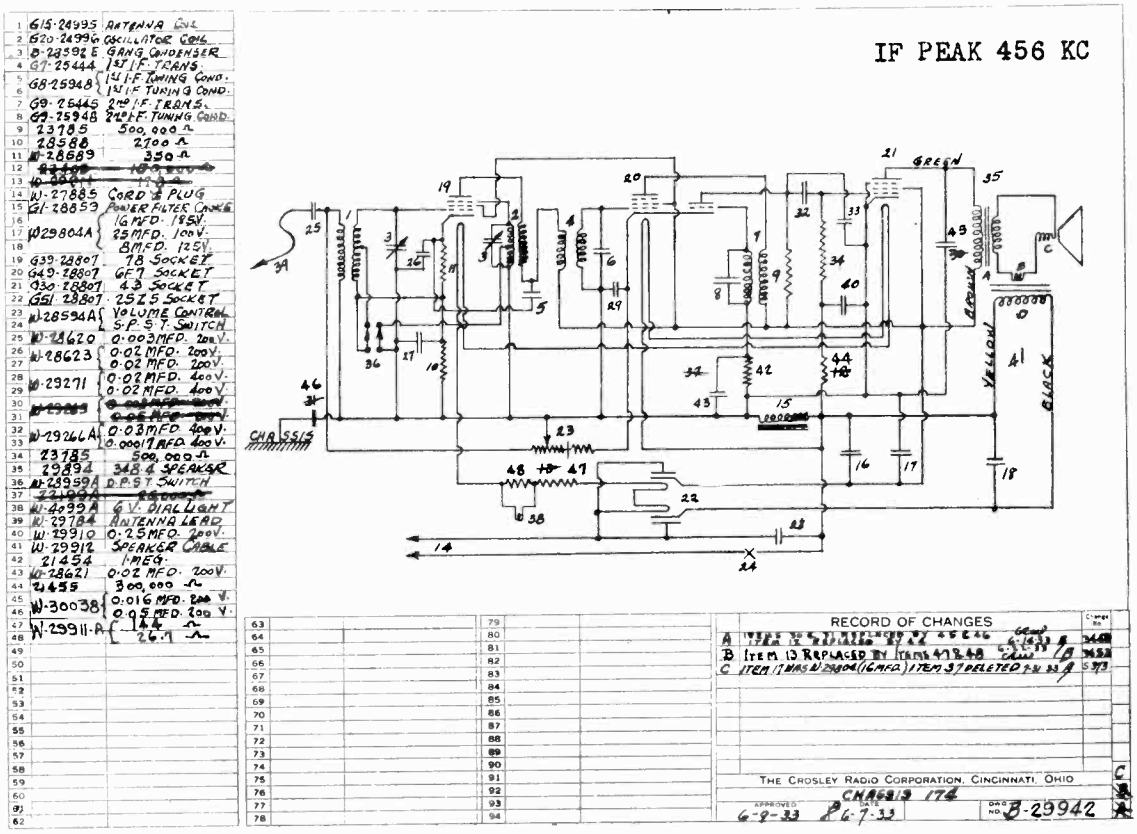
Model 174 is a four tube dual band superheterodyne designed for operation from 110 volt D.C. or 25 to 60 cycle A.C. electric circuits. The intermediate frequency used is 456 Kc.

Tubes and Voltage Limits

The following are the tubes and voltages measured with the receiver in operating condition but with no signal to the antenna circuit, and with a line voltage of 117.5 volts A.C., 60 cycles. All voltages, except filament, are measured with a 300 volt D.C. voltmeter (1000 ohms per volt) from tube contact to frame of condenser gang. Filament voltages are measured with a low range A.C. voltmeter.

Tube	Position	Plate	Screen Grid	Cathode	Suppressor Grid	Filament
78	Oscillator-Modulator	108	108	21	0	6.0
6F7	I. F. Amplifier and Detector	20 / 108	108	3.5		6.0
43	Output	104	110	0		25.
25Z5	Rectifier				110	25.

Voltage limits are plus or minus 10% of values given.
D. C. Voltages are 10% lower than values given.
Condenser frame to "B-" 20 volts, used to furnish bias to output system.



CROSLEY RADIO CORP.

MODEL 175
Schematic
Voltage

Model 175

Specifications

Model 175 is a fourteen tube dual band superheterodyne designed for operation from A.C. electric circuits. The intermediate frequency is 181.5 Kc.

Tubes and Voltage Limits

The following are the tubes and voltages measured with the receiver in operating condition but with no signal to the antenna circuit, and with a line voltage of 117.5 volts (235 for 220 volt receivers). All voltages, except filament, are measured with 300 volt D.C. voltmeters (1000 ohms per volt) from tube contact to chassis. Filament voltages are measured with a low range A.C. voltmeter.

Tube	Position	Plate	Screen Grid	Cathode	Suppressor Grid	Filament
58	R. F. Amplifier	280	90	2.5	2.5	2.5
58	Oscillator Modulator	280	90	32.0	0	2.5
58	I. F. Amplifier	280	90	5.0	5.0	2.5
58	I. F. Amplifier	280	90	4.5	4.5	2.5
58	A. V. C.	280	90	4.5	4.5	2.5
55	Detector	80		15.5		2.5
56	"Q" Control Tube	70		0-22.0*		2.5
56	A. F. Amplifier	165		90.0		2.5
56	Phase Shifter	125		6.0		2.5
4-45	Output	280		0		2.5
5Z3	Rectifier	295				5.0

Voltage limits are plus or minus 10% of values given.
***Voltage depends on position of "Q" control.**
Chassis to "B-" 75 volts of which 55 volts is used for biasing output tubes.